SD
1
V5

OCTOBER
1922

VETERINARY MEDICINE

4753 GRAND BOULEVARD, CHICAGO

Publicity Essential to the Veterinarian's Success
Suggestions for the Prevention of Live Stock Loss During Transportation
Report of the Poultry Clinic of the A. V. M. A.
"Passing the Buck"
Mastitis and Its Treatment
Diseases of Swine
Posology of Anti-Hog Cholera Serum and Virus
Spurious Parasites in the Feces of Animals
Catheter Left in the Bladder of a Gelding
Small Animal Practice
Zootechnic Notes, Queries and Answers, Association Reports, and More Than Fifty Other Articles

TABLE OF CONTENTS, PAGE 10
LIST OF ASSOCIATION MEETINGS, PAGE 6
CLASSIFIED ADVERTISEMENTS, PAGE 668

A Magazine for the Veterinary Profession

$4.00 the year

VOL. XVII No. 10

Your wish of YESTERDAY has come true TODAY

YESTERDAY—

You wished for a sure-enough **dependable** Anti-Hog Cholera Serum, with all the good left in and the bad taken out—and sold at a reasonable price.

You wished for a Serum that you would be **proud** to use in the presence of your clients.

You wished that a really practical and satisfactory **CLEAR** Serum was available.

You wished for a **refined** Serum embodying all the good qualities of "Bloody" Serum, but with none of the disadvantages of that product.

You wished for a CLEAR Serum that had **actually made good** right out in the field.

TODAY—

All your wishes of yesterday—and more—are embodied in **FORT DODGE IMPROVED CLEAR SERUM.**

A success from the start, the demand for this **superior** Serum has increased so rapidly that even our resources are taxed to take care of it.

FORT DODGE CLEAR Serum is **THE** Clear Serum that has been used right out in the field for several years—upon thousands and thousands of swine—and has never failed to make good.

It is **THE** Clear Serum, in the production of which, practically **none** of the antibodies are lost or discarded.

It is THE Clear Serum which, **in its finished state,** has to pass all B. A. I. tests—and in addition is subjected to rigid microscopic examinations and animal inoculation tests.

It is **THE** Clear Serum that has made such a success that other Serum Companies have been **compelled** to come out with Clear Serums of various kinds.

MAKE NO MISTAKE—Use Clear Serum this year—But

BE SURE IT'S FORT DODGE

Fort Dodge Serum Co., Fort Dodge, Iowa

"It's time to quit the old kind and begin to" . . . . . .

USE

ALEXANDER

"The Original and Genuine"

CLEAR SERUM

Obtainable at

IOWA

Alexander Laboratories,
D. S. McDermid, Mgr.,
Muscatine, Iowa.

MICHIGAN

Dr. Wise,
200 East Main St.,
Owosso, Mich.

ILLINOIS

White Cross Serum Co.,
East St. Louis, Ill.

INDIANA

White Cross Serum Co.,
Indianapolis, Ind.

OHIO

Drs. Buck and Shaw,
120 So. Main St.,
Urbana, Ohio.

TENNESSEE

Wilmer Vet. Supply Co.,
Memphis, Tenn.

SOUTH DAKOTA

Mineral Nutrition Co.,
Aberdeen, S. D.

COLORADO

Dr. P. C. Guyselman,
2830 Williams St.,
Denver, Colo.

CALIFORNIA

Thatcher Serum Co.,
Riverside, Calif.
Dr. Wrinkle,
Stockton, Calif.

GEORGIA

Southeastern Laboratories,
Atlanta, Ga.

MISSOURI

ALEXANDER LABORATORIES

2109 GRAND AVENUE KANSAS CITY

VETERINARY MEDICINE

Published Monthly by the Veterinary Magazine Corporation, 4753 Grand Blvd., Chicago, Ill.

L. A. Merillat and D. M. Campbell, Editors; J. F. DeVine, A. T. Kinsley, A. Eichhorn, L. H. Pammel, C. A. Zell, M. C. Hall, E. L. Quitman, W. J. Martin, E. Merillat and J. I. Handley, Department Editors; I. C. Brenner, Advertising Manager.

Entered as second-class matter, July 19, 1910, at Chicago, Ill., under Act of Congress of March 3, 1873.
Copyright, 1922, by Veterinary Magazine Corporation.

Vol. XVII CONTENTS FOR OCTOBER No. 10

EDITORIAL 589-592
The 59th A. V. M. A. Annual; Porcine Tuberculosis; Autothelasis of Cows; What We Know about Cancer; Human and Bovine Tuberculosis; Publicity Essential to the Veterinarian's Success.

EDITOR'S PERSONAL PAGE 593

PURELY PRACTICAL 594

IMPORTANT NEWS AND ANNOUNCEMENTS 595
Veterinary Corps News; Camera Snaps a Classic; Brenner on His Way; Transparent Dressings for Wounds; Discovers Culture Medium for Virus of Foot and Mouth Disease.

GENERAL PRACTICE—Edited by W. J. Martin and L. A. Merillat 597-608
Suggestions for the Prevention of Live Stock Loss in Transportation by Dr. W. L. Embree; Report of the Poultry Clinic of he A. V. M. A. by B. F. Kaupp; Passing the Buck by E. M. Boddington; A plea for More Alcohol; A case of Cutaneous Glanders by Dr. C. O. Kroener; Precocity in a Jersey Calf by Dr. L. A. Schmidt; Grasshopper Poison Kills Cattle.

CATTLE PRACTICE—Edited by John Francis DeVine 609-610
Mastitis and Its Treatment.

SWINE PRACTICE—Edited by A. T. Kinsley 611-620
Disease of Swine by Dr. Edw. A. Cahill; Dosage of Antihog-Cholera Serum and Virus; Stock Hog Problems; Unusual Hog-Cholera "Break"; Swine Should be Sorted; Why Pigs Cough; Convulsions in Young Pigs.

PARASITOLOGY—Edited by Maurice C. Hall 621-624
Spurious Parasites in the Feces of Animals.

ZOOTECHNICS—Edited by E. Merillat 625-628
Rats Demonstrate Value of Milk as Food; Vitamins Essential to Growth; Glass Stomach Indicates Digestibility of Foods; Bovine Tuberculosis Eradication; Map Shows Extent of Cattle Tuberculosis in the United States; Area Plan of Tuberculosis Eradication Increases; Badly Tuberculous Areas May be Freed from Disease; Better-Sires Enrollment Passes 8,000 Mark; and others.

CANINE, FELINE AND AVIAN PRACTICE 629-634
Small Animal Practice by O. V. Brumley; Pseudo-rabies, Worms, Convulsions; A Case of Feline Bots; Air Embolism in a Pup; Length to Amputate Airdale Tails; Granuloma of the Conjunctiva.

QUERIES AND ANSWERS 635-646

LIVE STOCK POISONING—Edited by Prof. L. H. Pammel 647-649

LOOKING BACKWARD 650

ECHOES OF THE ST. LOUIS CONVENTION 651-653

DISCUSSIONS, NEWS, PERSONALS 655-663

ASSOCIATION MEETINGS 664-672

Veterinary Medicine

Vol. XVII OCTOBER, 1922 No. 10

IN SPORT THE HORSE STILL REMAINS SUPREME

An exciting moment during the polo match between Princeton and Yale in which the Tigers beat the Sons of Eli. The victory gives Princeton both the outdoor and indoor polo championship in the intercollegiate field.

(Int. News Photo)

The 59th A. V. M. A. Annual

The fifty-ninth annual meeting was a success.

President Kinsley made good his promise to have a good meeting.

He promised a practitioner's meeting and supplied one that met the approval not only of the practitioner but of all concerned. It was a good meeting for all. All were pleased, all were well instructed and all departed satisfied that they had come.

It was probably the best meeting in thirty years if not of the entire annals of the association. It deserves the distinction of being a meeting at which the administrating forces were so skillfully marshalled as to turn threatened pandemonium into complete harmony which, to say the least, was quite an achievement in view of the pre-convention rumors afloat throughout the country. The A. V. M. A. is saved; it is not on the rocks as many expected, and although much remains to be done to root its popularity into every soul there is a friendly feeling that everyone in office is willing to sacrifice personal gain for the general good. With a sweet taste in everyone's month there is little to fear for the immediate future.

The attendance was not large, in fact it was away below the average of Middlewest meeting, but this can be accounted for by the prevailing hard times and the railroad strike. Then probably many practitioners stayed away feeling they owe their best allegiance to the state associations and could not make additional sacrifices to attend one that had been thought dilatory in the matter of attending to their material needs. Counting members and visitors the attendance was about 600, which all things considered, is not a bad showing.

The program was filled with well selected contributions and unlike several years past, the reporters with few exceptions were there to read them.

The sections on general practice carried out a program that was a classic, the one on sanitary science and police is reported to have met the highest ideals and the clinics will go down in history as the "best ever."

For the first time those interested in small animal practice conducted both a literary and clinic program of their own, and although the by-laws do not provide for such a section the success of this enterprise arbitrarily created to meet a popular demand, presages a con-

stitutional amendment to legalize the departure.

The question of whether to include a clinic or not in the annual program should now be settled for some years to come. It is not a new question; the clinic has always had its exponents and opponents, but in no case to our recollection have the latter been able to carry out a popular meeting without this feature, and in every case when a good orderly clinic was held the meeting was pronounced a success. The feature is restful, invigorating, sometime exciting and always very instructive. It always pleases the membership, and we believe that all opposition will henceforth break down from lack of popular support.

While it would be unjust to attribute the success to anything but good team work on the part of all the officers, Muldoon, Kingman, Flynn and Rives seem to be entitled to especial mention for their administrative ability, and Boyd, De Vine and Lucky for their instructive lectures at the cattle clinic.

The Question of Reorganization

The complaints from the membership that the association had become undemocratic and of little benefit to the majority, were well taken care of in the report of the committee on reorganization, which was unanimously adopted. Instead of precipitating a controversy that might have caused discord for several years, this committee submitted some sound recommendations for future study, and a copy of a new constitution and by-laws to be distributed among the members with a view of its final adoption in 1923. The personnel of the new committee of five members, with Dr. John R. Mohler as chairman appointed to make the final report next year, seems to have inspired universal confidence in the wisdom of the forthcoming action.

Another innovation that did much to create harmony was the recommendation of the executive board to combine the offices of secretary and editor. Both Secretary Mayo and Editor Mohler had resigned to make the way clear for this change and the only serious contest of the whole meeting arose when the many admirers of the editor, without his approval, endeavored to induce him to retain the office for another year.

The New Officers

Dr. W. H. Welch of Lexington, Illinois, was elected president; Col. J. A. McKinnon, director-elect of the veterinary corps of the army, Washington, D. C., 1st vice-president; Dr. J. H. Ferguson, Lake Geneva, Wisconsin, 2nd vice-president; Dr. M. C. Baker, Montreal, Quebec, 3rd vice-president; Dr. George Hart, University of California, 4th vice-president; Dr. E. P. Flower, New Orleans, Louisiana, 5th vice-president; Dr. Cassius Way, New York City, member-at-large of the executive board; and Dr. M. Jacobs, Knoxville, Tennessee, treasurer.

The appointment of Dr. H. Preston Hoskins, Detroit, Michigan, as secretary-editor by the executive board, was officially approved by the association.

PORCINE TUBERCULOSIS

The extent of the loss occasioned by tuberculosis in swine is not appreciated by the producer. According to the reports there are about 12 per cent of swine that are slaughtered at official establishments that are affected with tuberculosis. The loss occasioned by tuberculosis is second only to hog cholera. These enormous losses could be prevented. The following instructions promulgated by the agricultural ministry of Denmark in 1905 is indicative of the methods recommended for prevention of the losses due to porcine tuberculosis:

1. Hogs must never get milk or creamery wastes that have not been heated to 80°C. (176°F.).

2. They must never get unboiled colostrum, household milk or milk from cows with diseased udders.

3. Hogs must not enter the cow stable nor root in the cow manure.

4. They must never eat the carrion of animals or poultry.

5. They must never obtain butcher's waste, either of cattle, hogs, calves or poultry. All feed of this nature must be boiled or buried.

6. Never employ tuberculous animals for breeding purposes. Be cautious, therefore, in buying breeding animals, especially at auctions, where no guaranty or pedigree is given.

7. Never buy sucking pigs fattened with raw cow's milk.

8. Clean and disinfect thoroughly the stable every time a set of hogs leaves it after being fattened.

9. Disinfect the hog stable at least twice a year.

10. Provide good ventilation and abundant light for the stable and goods runs for cows, sucking pigs and shotes.

Observe these rules and tuberculosis will disappear.—A. T. K.

AUTOTHELASIS IN COWS
(Self-sucking)

Every year brings out the usual crop of inquiries about self-sucking cows. The subject is generally thrashed out in agricultural papers but the discussions are always along the lines of mechanical appliances to prevent the habit and seldom mention the matter of cause. Autothelasis is a deficiency disease sometimes resulting in pica according to our observation, and is generally curable by proper medication and dietary changes. Of five cases held under observation three responded, one developed licking disease and died of emaciation, while the others responded to dietetic treatment with free access to minerals consisting of common salt, bone dust and sulphate of iron in one case; common salt, ground oyster shells and sodium phosphate in another; and common salt, calcium carbonate and sodium phosphate in the others.

In short, autothelasis generally yields to a narrow ration with free access to minerals of which a combination of common salt, ground oyster shells and sodium phosphate is a good example. The mineral compound sold under the trade of Vitamineral should answer the purpose. While this regimen is effecting the cure by slowly removing the cause, the best mechanical appliance to use is a well-fitted bridle equipped with a common snaffle bit.—E. M.

WHAT WE KNOW ABOUT CANCER

"We know that, if an early cancer is completely removed, it will not return. The disease can be cured.

"We know that there is a time when every cancer can be cured, for it first exists in what is known to scientific men as a 'precancer.'

"We know that cancer is at first a lump or sore that can be felt with the fingers or seen with the eye; or gives definite warning which, if we knew how to interpret, could be cured.

"We know that nine cancers out of every ten do not cause pain in the early, curable stage—this is unfortunate.

"We know that cancer starts as a result of a long continued irritation. If the irritation is removed, cancer will not develop.

"We know that cancer develops at the edge of a scar where a scar and normal tissue meet. If the scar is removed, the cancer will not develop.

"We know that certain definite symptoms precede every cancer just as surely as wind clouds precede a rain storm; and the time is coming when these symptoms will be heeded."

The late Dr. John B. Murphy, world famous surgeon of Chicago, once said: "It is the time and not the extent of the treatment that determines the final outcome of cancer."—Chicago Health Bulletin.

BOVINE AND HUMAN TUBERCULOSIS

Commenting on an exaggerated, scare-head statement before Parliament by Sir Watson Cheyne that about 60 per cent of the various forms of disease in children were due to infection from tuberculous cattle by means of milk, The Lancet, an ardent champion of a purer milk supply, asks, "Do the facts as ascertained support such statements as these?" and reviews a monograph by Dr. F. Harbitz, professor of pathology at the University of Christiania which exposes an entirely contrary opinion.

The former is an excerpt from a speech delivered to secure an appropriation from Parliament while the latter is a sane relation of facts obtained by years of observation and experimental work in search of the truth.

Professor Harbitz has published maps of Norway which show that human and cattle tuberculosis so far as prevalence is concerned do not run parallel, and says without equivocation that tuberculosis of cattle does not perceptibly affect the frequency in man. At the agricultural college at Aas, although the cows were saturated with tuberculosis and the milk was consumed raw a period of over 43 years by the staff and their children, yet no case of tuberculosis occurred among the children. He finds proof lacking as to the antagonism of the two types to each other and is skeptical about the claim that the bovine type produces a mild form of the disease and holds to the opinion that the quantity of virus absorbed, the localization, and the patient's age are more significant than the type of bacilli.

Furthermore, Dr. A. Lankester, referring to his work on tuberculosis in India, supports the view that "In this country (India) surgical tuberculosis which is very prevalent in many areas, is entirely independent from infection from bovine sources."

"Dirty as a pig" is slander, for pigs in their native state are clean animals and they would be clean when domesticated if they had their choice.

PUBLICITY ESSENTIAL TO THE VETERINARIAN'S SUCCESS

Although the veterinary practitioner is actually being backed into obscurity by the prevailing ethics that forbid him to indulge in any kind of advertising, the farm bureau, who in many instances has shown little regard for the welfare of the struggling practitioner, is free to and does get into the limelight a great deal of the time through the local press. Articles which often contain portraits of the farm adviser with reading material below showing how he and the federal veterinarian of the district are co-operating to do this and that are seen on every turn, while the practitioner who probably brought the very first message about veterinary science to the neighborhood is struggling against big odds to keep body and soul together.

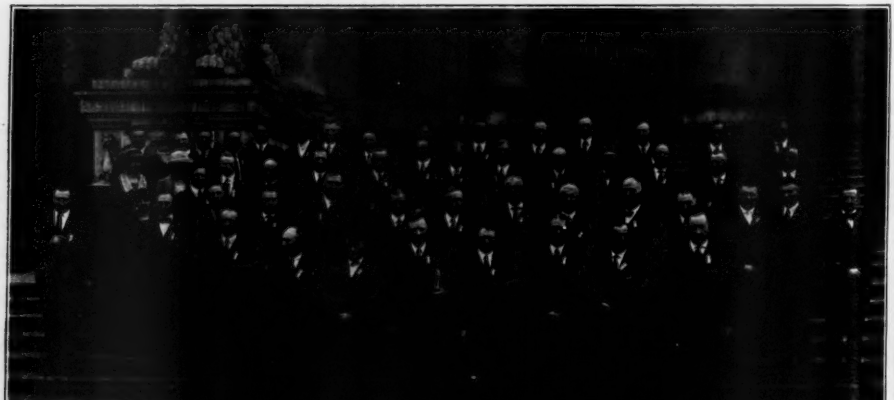
"Farm bureau treats 90,000 hogs"; "Farm adviser eradicates hog-cholera from the county"; "Farmers saved thousands in hog-cholera vaccination"; "County agent, John Doe, working with Dr. Jones, of the federal department of agriculture, testing the Brookside herd," etc., etc., are but a few of the many headlines we glean from the public press.

The wisdom of these movements is not under discussion here. It is the incongruity of the situation we deplore. It is a case in which a well advertised enterprise is gaining ascendency over one that obscures itself with self-imposed restrictions.

The day has not arrived and should never be allowed to arrive when we should throw our traditional ethics aside for the purely commercial conduct of those encroaching upon our field. We love our profession; we approve of its ethics and we do not want to become a wholly unaltruistic trade. But if we stand idly by, while being obscured by intruding agencies the enterprise we have succeeded in developing into a profession, will become less and less inviting to prospective recruits and will then rapidly deteriorate to a trade into which anyone who wishes may enter.

Unless those who train men for the veterinary profession can show concrete reasons why students should enter the colleges for the veterinary degree it is not likely that many will enter. To get recruits the profession must remain a definite, a real entity, recognized as such by society and not as a mere side-line wherein its personnel plays a secondary role.

To hold the ground we have won we must advertise and we must advertise in the way that will not bring us into the realm of mere trades. Our worth is not known. It must be made known. We must advertise by organizing everywhere. Every locality should have an organization, every state should have a powerful one, and all of these should be marshalled by a big national body that will wield an influence strong enough to take a masterful hand in combatting any harmful trend. Anything less than this means drifting, drifting means oblivion.



—Courtesy of Secretary Carl Cozier.

SECOND ANNUAL MEETING OF THE NORTHWESTERN VETERINARY ASSOCIATION. Vancouver, B. C., July 21-22, 1922.

Editors' Personal Page

There is no wisdom nor profit in discord.

Just how bad would men become if they were not watched?

No tremendous institution has ever been built up without the aid of a sound advertising program. Makeshift experiments are a waste.

What is the matter with the A. V. M. A.? Nothing. Kinsley innoculated it with the bacterin of harmony and Lynch grafted it with an endocrin gland that will make it grow.

Discriminating linguists use the word "tuberculous" and not "tubercular" in referring to tuberculosis. A disease may be tubercular without being tuberculous.

Too often we hear the big men of the profession knocking one another in one breath and advising the struggling practitioner to do the opposite in the other.

Dr. Ferneyhough, state veterinarian of Virginia, speaking before the American Veterinary Medical Association at St. Louis, said, "It is unethical for the veterinarian holding public office to belittle or ignore the one who gives his life's work to the practice of his profession."

The slogan "Get the last tick" appears to have stimulated tick eradication in Texas. A recent report shows that over six million cattle have been dipped. This indicates progress and is quite significant to the cattle industry.

Competitors that boost each other progress, and those that condemn, censure or belittle their competitor have a questionable reputation in their community. If you can not boost your competitor and your profession, say nothing and change your occupation.

Knocking as a regular practice doesn't pay.

The man who gets ahead is the one who works more hours and harder than the average.

VETERINARY MEDICINE is not a mere archive for technical material. It is a magazine for the veterinarian that aims to "Hew to the line and let the chips fall where they may."

"I have no patience in the long run with the idea that we should shorten our hours of work and add to our leisure and loafing period," says Dean Waters of the Kansas College of Agriculture.

"Dispensing the official drugs is preferable to prescribing proprietary remedies," says Dr. Quitman, "because it keeps the practitioner studying the materia medica."

An ex-druggist, now a prominent veterinarian, confessed on the floor of the meeting of the A. V. M. A. at St. Louis that he had put up hundreds of prescriptions that contained nothing the doctors prescribed but the water.

"There are at least three kinds of fools in the world: educated fools, ignorant fools, and d—n fools. I saw a college professor, a hod-carrier and a dairyman each buy a pound of oleomargarine the other day. Classify them yourself."—Hoard's Dairyman.

New York City and Pittsburgh veterinarians are quarreling about the matter of advertising in the telephone directory on the grounds that our code of ethics prohibits. Obviously veterinarians are beginning to wonder why those who sell supplies may indulge in all kinds of spectacular advertisements while those who deliver them to the patient must hide sub rosa under the cloak of an antiquated code.

Purely Practical

Informative Hints from Those Who Know and Do

For round worms in chickens try tobacco dust mixed in the feed.—Hart.

To anesthetise a hundred pound hog use a rectal injection of four ounces of chloral hydrate dissolved in a pint of cold water.—Dykstra.

Equal parts of turpentine, ether and chloroform is the best mixture for intra-tracheal injections for lung worms.—Symms.

Egg eating hens are cured by feeding tankage, meat scraps or any animal proteins together with plenty of grit and ground minerals.—E. M.

Castor oil well rubbed into the skin has a remarkably wonderful curative effect on dogs affected with follicular mange.—Quitman.

Sodium salicylate is a good drug to give internally for catarrhal mastitis because it is in part eliminated by the mammary glands and thus exerts a disinfecting influence. — Dean Klein.

Herron, a prominent dog specialist, of Chicago uses kerosene to the exclusion of all other remedies for all kinds of parasitic skin infestations. The kerosene is allowed to evaporate for a week in an open jar before using.

CURATIVE PRESCRIPTION FOR FOLLICULAR MANGE

(Demodex mange)

℞

Kerosene 8 oz.
Linseed oil, 8 oz.
Phenol, 1 oz.
Sulphur flor., 4 oz.
Oil of tar, 1 oz.

Mix, shake well and apply after cleaning the body well of encrustations. Allow the application to gradually wear off and repeat only when necessary.—Marsteller.

Dimmock recommends atoxyl intravenously for strongyli.

Ninety percent of diseased dogs are infested with parasites.—Marsteller.

The lethal dose of oil of chenopodium for dogs is one half a cubic centimeter per kilogram of body weight.—Hoskins.

ABSORBENT LIQUID

℞

Tincture iodin, 2 oz.
Gum camphor, 3 oz.
Gasoline, q. s., 16 oz.

Shake, and apply with a brush. Indicated for curbs, bursitis, tendonitis, etc.—R. F. Reeds.

A GOOD HEALING OIL

℞

Phenol.
Creolin.
Columbian spirits, of each 8 oz.
Castor oil, q. s., 1 gal.

Apply three times a day. Will repel flies. —R. F. Reeds.

HEALING PASTE FOR SORE TEATS

℞

Castor oil, 8 oz.

Bismuth subnitrate, q. s. to make a soft paste.

M. Sig. Useful also for galls, ulcers and flexion crevices of horses.—R. F. Reeds.

FOR STHENIC FEBRILE CONDITIONS

℞

Fluidextract of aconite, 10 minims.
Fluidextract of belladonna, 30 minims.
Fluidextract of bryonia, 1 dram.
Sodium salicylate, 2 drams.
Distilled water to make 1 ounce.

M. Sig. Dose one-half ounce to be repeated as required, for pleurisy, laminitis, lymphangitis, pneumonia, etc.—R. F. Reeds.

TRANSPARENT DRESSING FOR WOUNDS

Lieutenant Mombet of the remount depot at Merignac, France, in the Revue Veterinaire, August, 1922, describes a unique method of bandaging wounds with a transparent bandage.

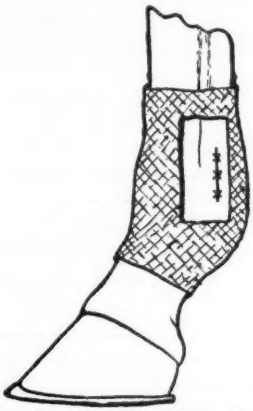


Fig. 1. The Fenestrated Gauze Applied.

that will not only protect the wound from contamination but enables the surgeon to observe the healing process without the disturbance incident to frequent removal of the protective dressing.

The wound is wrapped with a thick gauze

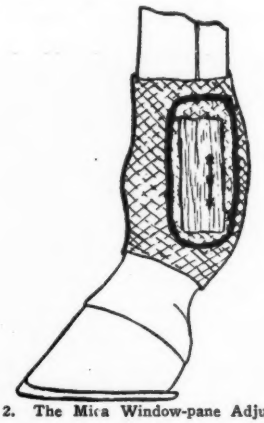


Fig. 2. The Mica Window-pane Adjusted.

into which a fenestrum has been cut. A piece of mica larger than the fenestrum is then laid over the opening and covered with a second fenestrated piece of gauze to hold it in place The whole is then retained by wrapping up the region in such a way as to leave the mica exposed.

The author states that the mica will at first become opaque from sweating but this soon

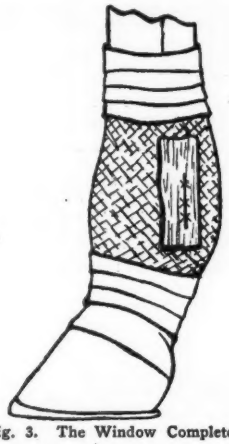


Fig. 3. The Window Complete.

disappears as the moisture is absorbed by the surrounding dry gauze. The accompanying figures illustrate the procedure.

DISCOVERS CULTURE MEDIUM FOR VIRUS OF FOOT-AND-MOUTH DISEASE

According to report of Titze in Archiv.f. wiss.u.prakt.Tier and the Berl.Tier.Woch.No.4, 1922, he has successfully prepared culture media in which he is able to cultivate the causative agent of foot-and-mouth disease. The formula is still a secret and is only given out to high officials, but from one of his works it can be seen that physically it resembles the lymph of the aphthous blister. He has been able to carry the cultures through four generations. The medium becomes cloudy after 24 to 48 hours and that the cloudiness is caused by the growth of the "organism" was proved because the artificially cultured medium as antigen with blood of recovered animals gives positive reaction.—Borros.

The big gap between the producer and consumer must in some way be narrowed. When a breakfast food costing from $20 to $30 a ton reaches the consumer in packages it costs $500 a ton.

Important News and Announcements

The splendid article by Professor J. N. Frost on "Diseases of the Udder" in the September issue should have been credited to the Short Course for Veterinarians given by the University of Minnesota in July, where it was read as a contribution to the regular program.

Mr. I. C. Brenner, the versatile advertising manager of VETERINARY MEDICINE, is making another touring trip through the country in behalf of the journal. He will write interesting news items from time to time, making

comparisons between conditions now and those he found during his famous 57,000 mile journey five years ago. The photograph reproduced was taken at the office of the journal on the day of his departure, August 31.

VETERINARY CORPS NEWS

Col. Gerald C. Griffin, V. C., U. S. A., having been found incapacitated for active duty by an examining board on account of disability was retired July 24.

Major Chas. H. Jewell has been assigned to the headquarters of the 2nd corps area as assistant to the corps surgeon and in addition to attending veterinarian at those headquarters, Forts Slocum and Woods and coast defenses of eastern and southern New York and Sandy Hook.

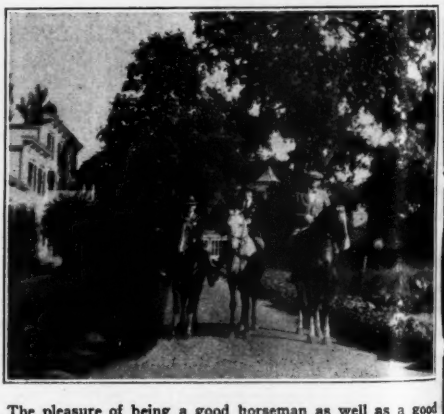
First Lieutenant Edward M. Curley is transferred from the general intermediate depot at Chicago to Fort Des Moines for duty as station veterinarian.

First Lieutenant Paul R. King is transferred from the Panama Canal department to the general intermediate depot at Chicago on completion of the present tour of foreign service.

Col. Charles D. McMurdo is retired from active service after more than 32 years of active service to take effect December 22, 1922.

Major Robert J. Foster is on temporary duty at the surgeon general's office, Washington, D. C., after a long service in Germany as chief veterinarian of the American forces on the Rhine. On his way home he visited England to observe the operations of the veterinary service of the British army. He attended the meeting of the A. V. M. A. at St. Louis, August 28-September 1, where he read an interesting paper on the new organization of the nation's military forces.

CAMERA SNAPS A CLASSIC



The pleasure of being a good horseman as well as a good veterinarian is illustrated in the above figure of Dr. John F. DeVine of the Goshen Laboratories (right) and Mr. and Mrs. David Rothensie of Montgomery, N. Y., returning to the DeVine stables after the hunt that followed the festivities of the Orange county (N. Y.) fair in August.

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

Suggestions for the Prevention of Live Stock Loss During Transportation

W. J. Embree, M. D. C., Chicago, Ill.
Chief Veterinarian, Western Weighing and Inspection Bureau

THE history of our meat supply commences on the farm. In past years much of it ended there but with the advent of our large market and packing centers and the improvement of our railroad facilities it became usual for a large percentage of our market animals to be subjected to a railroad journey.

Since the first live stock was loaded in stock and we now wish to appeal to the country practitioner to carry a few of these ideas to the farmer and shipper so that they may profit by these findings and do their share to decrease loss in transit.

We first wish to call your attention to the picture of the lungs of three hogs.

This cut is from a photograph of the lungs

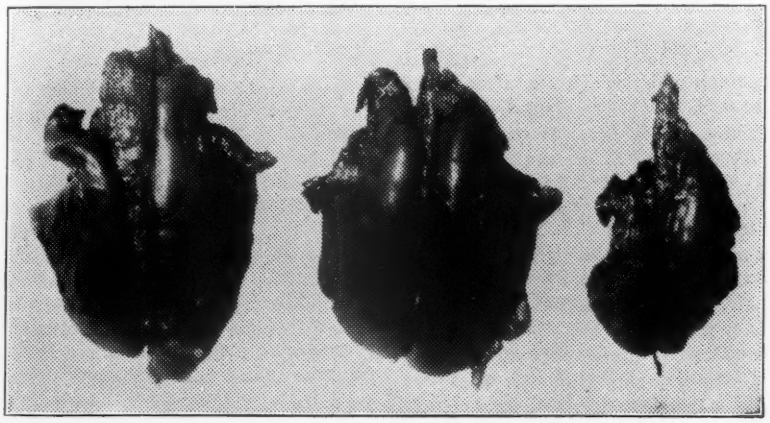


Fig. 1. Showing Lungs of Hog of Same Weight Vary in Size.

ars we have had to contend with a death loss during transportation which seemed to increase from year to year.

In 1917 a small force of veterinarians were employed by the Western Weighing and Inspection Bureau, for the purpose of examining dead and crippled animals at our large western markets; this force has been increased till it now includes about forty veterinarians and eighty lay inspectors at fourteen western markets.

From the investigations made by these men many interesting things have been developed of three hogs which were about the same age and weight at the time of death. The one at the left represents a lung of a hog that was raised on the range where it had to rustle for itself, and therefore, took plenty of exercise.

The second are lungs of a hog fattened on the range—that is, had to rustle for part of its food but supplied with some of it. It did not take as much exercise as the range hog, but it exercised enough to develop a strong pair of lungs.

The third figure are the lungs of a hog fed under the usual Corn-Belt conditions. That

is, the hogs are placed in a feed lot soon after weaning time and supplied with all the food necessary to make them fat.

The pens may be large or small, but the hog when supplied with abundance and fed so as to produce the largest amount of meat on its body in the least number of days does not exercise to any great extent and grows fat and plethoric. This kind of treatment develops the digestive organs at the expense of the organs of respiration and circulation, and these organs (the heart and lungs) only develop sufficiently to meet the requirements of the condition under which the animal lives.

Fig. 2. Ice Hung from Roof for Cooling Hog Shipments

Lung Capacity of Pen-fed Hogs Subnormal

The function of the lungs is to purify the blood of the body and in the hog perspiration (sweating) being almost impossible a large part of the excess moisture and heat of the body passes off through them. A hog with undeveloped lungs will therefore suffer more quickly and severely in hot weather than one in which they are well developed.

We do not wish to say that all pen-fed hogs have as small lungs in comparison as shown in the figures, but we believe that hogs that are fattened quickly do not develop more than 60 or 70 per cent of the lung space they should normally have. In other words the heart and lungs are developed sufficiently to keep them alive while at home, but are not in condition to keep them alive when they are subjected to the unusual exertion of being rounded up, assorted as to size, hurdled into wagons or driven on the road for the purpose of transporting them to market. It is this hog with the poorly developed heart and lungs that comprises a large percent of in-transit losses. The strain on these vital organs starts the minute the hog is exerted in removing it from the home pen, then it is subjected to excitement of the trip to the loading point which may be made in the most careful manner, but it is impossible to subject a fat hog to this trip without causing it to take more exercise than it has taken at any one time since it was a small pig. This exertion causes the heart to increase in action and the blood vessels of the lungs dilate and become congested. The hog pants and becomes short of breath, and if it is not immediately placed in a cool, quiet place where it can become normal, it will die of acute congestion of the lungs or other lung disease.

Preventive Measures

Much can be done by the shipper to prevent the loss of these delicate fat hogs in hot weather. They should be rounded up quietly at home, hauled to the loading point and quietly driven into a sand bedded car that has been previously sprinkled or wet down as short a time as possible before the train starts. They should not receive a full feed the day of shipment nor should they be fed in the car. Great care should be taken to see that they are not overcrowded and whenever and wherever possible place ice in the car hung in bags from the roof.

For many years shippers have used ice hung in the roof of the car for the purpose of making hogs more comfortable during transit in hot weather. The Western Weighing and Inspection Bureau did not originate this idea but they saw the advantages in so handling shipments of hogs in hot weather and are taking the liberty to advertise it so that it will be called to the attention of other shippers and used by them. In 1920 we instructed all live stock inspectors working at the western markets of Chicago, St. Louis, Kansas City, St. Joseph, Omaha, Sioux City, St. Paul, Denver, Ft. Worth, Wichita and Oklahoma City to report to this office the names and addresses of all shippers who iced their hogs in transit. In

this way we procured information that showed 184 shipments of hogs were iced during the summer months of 1920 from which 17 dead hogs were removed making a ratio of about one dead hog to every 11 cars shipped.

The names of these 184 shippers were placed on a circular and sent back to them thanking them for the attention they had given their hogs and asking them to call the attention of any shippers in their neighborhood to what they had done and see if they would not take the same precaution when they shipped hogs in hot weather.

During May and June, 1921—613 cars were iced from which 40 dead hogs were removed showing a great increase in icing of hog cars. This made a ratio for these two hot months of about one dead hog to every 15 cars. Following the 1921 work further we find that during the hot season of that year namely the months of May, June, July, August and September, 1,127 cars were reported iced by our inspectors from which 66 dead hogs were removed making a ratio on the whole movement of about one dead hog to every 17 cars.

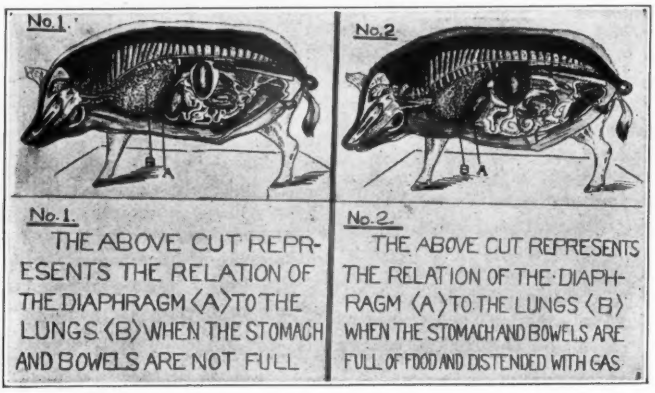

No.1.
B
A
No.2.
B
A
No.1.
THE ABOVE CUT REPRESENTS THE RELATION OF THE DIAPHRAGM (A) TO THE LUNGS (B) WHEN THE STOMACH AND BOWELS ARE NOT FULL
No.2.
THE ABOVE CUT REPRESENTS THE RELATION OF THE DIAPHRAGM (A) TO THE LUNGS (B) WHEN THE STOMACH AND BOWELS ARE FULL OF FOOD AND DISTENDED WITH GAS

Fig. 3

During these hot months it is not unusual to have a ratio of one dead hog to every four cars where ice is not used, therefore, you can plainly see that something was present to decrease the death rate in these cars that were iced. Complete figures for 1922 are not yet available but what few we have obtained show approximately the same ratio as 1921.

Hanging Ice the Most Lasting

As to the manner of icing we do not wish to say that ice must be hung in the car in order to gain advantage from it. We have noted good results from laying it on the floor but we have also noted that where ice was placed loose on the floor of the car it did not last near as long as where it is hung up in bags. A few hot hogs coming in contact with ice placed on the floor of the car will melt it very fast and it will only last for a few hours. On the other hand a small amount of ice, say 300 pounds, distributed in six bags hung in the roof of the car, has been found on actual test to last for thirty hours in hot weather. This would cover an ordinary trip. In addition to this when it is placed on the floor of the car only a few hogs could gain advantage from it without it was all over the car. When it hung up to the roof the drip from these ice bags is scattered all over the car by the swinging and movement of the car and the cool air from the ice will settle downward, decreasing the temperature in such a manner so that all of the hogs regardless of size will get equal advantage.

It is unnecessary to say that ice bags are not a cure for all shipping loss for if the hogs are tired and hot and panting when placed in the car some of them would be likely to die even they were packed in ice; but the hanging of ice in the car will give them all a better chance to return to normal and will assist them to quiet down more quickly.

Some shippers have told us that they had less shrink where their hogs were iced in hot weather. This is a logical conclusion for the reason that if the hogs are cool and comfortable eliminations from the body will not be as great as if the animal is restless and hot and

these body eliminations are what constitute shrink in transit.

Feeding in Cars Wrong

A very serious cause of the loss of hogs in transit, especially if they are fat, is the feeding of them immediately before or after they are loaded into the car.

This is often done with the intention of decreasing shrinkage but the increased danger of loss is likely to have the opposite result.

The above diagram has been prepared with the intention of giving some idea why hogs that have their stomach and bowels full of food suffer more in hot weather than when empty.

When a hog eats its fill in the feed lot under normal conditions it will find a quiet place and sleep while during digestion, but as is impossible in the excitement of transportation fermentation and gas formation occurs with the result indicated in No. 2, Fig. 3.

From this explanation you can see that when the stomach and bowels are full and distended they will take up more room than when empty. The abdominal wall will distend somewhat but great pressure will be exerted on the diaphragm and as it is pushed forward the lungs and heart are compressed forward into the chest which cannot distend on account of the ribs. This pressure can become so great in bad cases of indigestion that the lungs cannot expand and death results.

The figure at the right is intended to show how the diaphragm is forced forward hampering the work of the heart and lungs. When this happens in hot weather when the lungs have plenty of work to do (they being the principal organ in the hog for reducing body temperature) the animal will suffer greatly and the over-worked portion of the lungs may become congested and death results. A large percentage of animals that die in transit show this condition to a greater or less degree.

Losses Reduced

Loss in transit has been greatly reduced. Since 1917 concentrated efforts have been made by various interested organizations. Most of our large railroads of instituted departments for the prevention of loss in transit to work in connection with the Inspection Bureau and the American Institute of Meat Packers and its allied organizations have closely co-operated and much assistance has also been received from the American Farm Bureau Federation.

By the assistance of these and other organizations many thousands of circulars have been distributed and the results have been very gratifying. The following tabulation shows the hog receipts, dead, and ratio for the month of June at eleven western markets for three years:

	Receipts No. Head	Dead Head	Ratio No. dead to total received
June, 1920.....	2,188,012	7,157	1 to 300
June, 1921.....	2,139,155	4,279	1 to 500
June, 1922.....	2,432,650	3,961	1 to 600

We have many other statistics that show that conditions are improving, but space will not permit the use of them.

Such observations and investigations as we have been able to make lead us to believe that a large part of loss in transit can be prevented if the shipper will do his part when taking animals to loading point and placing them in the car and most of these shippers are anxious to receive any information that will assist them in reducing loss in transit.

No one of us can do much, but if we will each do our share and pass the information along the line greater saving of food will result.

OPERATION FOR UMBILICAL HERNIA IN MALE SHOTES

I notice in VETERINARY MEDICINE an article fully and completely describing a new method for handling umbilical hernia. The plan recommended seems such a good one I shall try it at the first opportunity, but I note that it is not practical for male shotes.

My method of handling these is to clamp the hernia as usual with an iron clamp, then I make an incision along the median line behind, two inches long, expose the penis by dissection and loosen it from its tissue attachments within the dimensions of the incision and amputate it as far forward as possible.

The after-care is no different than in other similar operations.

West Point, Iowa. L. A. Schmidt.

Horses should be watered before giving a feed of grain. Grain requires gastric digestion and if horses are permitted to drink soon after a feed of grain, a portion of the ingested grain is washed into the intestine and is not properly digested.

Report of the First Poultry Clinic Held by the A. V. M. A.

FOR the first time in its long history the American Veterinary Medical Association featured poultry diseases by a poultry clinic held in connection with the general clinics of the 59th annual meeting at St. Louis, August 30, 1922.

This section was in charge of Dr. B. F. Kaupp, poultry investigator and pathologist of the North Carolina Experiment Station, who was assisted by Dr. E. W. Saunders, St. Louis; Dr. H. R. Schwarze, United Serum Laboratories, St. Louis; Dr. G. G. Graham, Jensen-Salsbury Laboratories, Kansas City; and, G. P. Plaisance and C. D. Wilkins of the Scientific Laboratories, Purina Mills, N. C.

A FOWL TYPHOID DEMONSTRATION

The first demonstration was that of fowl typhoid, produced from the germs (Bacterium sanguinarium) isolated in studies made by the poultry pathology research laboratories of the North Carolina Experiment station.

The history of this outbreak was given as follows: On examining the premise five dead birds were found in the house. It was noted that the chickens had been eating carcasses which further examination showed were full of maggots. The sick birds showed salivation, great prostration, many too weak to walk, others with staggery gait, some sitting down with heads resting on the ground, and still others with head and neck curved forward under the breast, much the same as in limberneck. However, examination of the inoculated culture medium the next morning showed clearly it was a very violent and virulent outbreak of fowl typhoid.

A vaccine was hurriedly made and all of the sick birds given 1 cc. of an emulsion made by washing the growth off the agar with physiological salt solution (0.85 per cent) and this emulsion subjected to a water bath at 60 degrees C. for sixty minutes. A few of the birds found in another coop were also vaccinated. The next day an autogenous vaccine made from the first dead birds was used. It was grown in bouillon and heated in water bath at 60 degrees C. for 60 minutes. All were vaccinated including one turkey, eleven waterfowls, and twelve pigeons. The young birds including chicks in brooding were vaccinated twice, the chicks receiving one-half dose. The adult fowls located where the disease made its appearance were vaccinated twice.

The first day one chick was dead and eleven more were taken to the hospital, and on the second day two more were dead.

It required six days for the vaccine to check the outbreak and it appeared that the period of incubation is about three days under field conditions. It required four days to produce immunity. In another outbreak among old birds only, the vaccine prepared in a similar manner stopped the disease at once and had decided curative action on the sick. In this outbreak, only a few of the sick birds recovered as a result of the vaccination.

On the fifth day, three of the birds were placed in the hospital and given treatment by vaccination. They were later returned to the flock.

It was observed that a few hours after the vaccine was given the temperature dropped. The first vaccination of 1 cc. of the vaccine made from stock cultures was followed with 2 cc. of a twenty-four hour bouillon growth vaccine and in two days with 2 cc. of an autogenous vaccine made from agar slant cultures.

A number of cases were reported as regards to symptoms, diagnosis lesions, bacteriological findings and the results obtained from vaccination.

Summary

The clinical symptoms including the cloacal temperatures and respiration were studied in thirty-four cases, of which 25, or 73%, died and came to autopsy, and nine, or 27%, recovered. That is, sick birds not vaccinated all died, while 27% of those that were sick and vaccinated recovered. Only birds from four to five months of age were attacked and the disease was arrested by vaccination. The outbreak was a virulent one and spread rapidly. It was first thought to be limberneck, but the reading of the inoculated nutrient agar slants the next morning showed it to be fowl typhoid.

Vaccine was hurriedly prepared and in the afternoon the sick birds and part of the first flock attacked, then the only one, were vaccinated. The following day autogenous vaccine was used on three pens affected, but it required four days to secure immunity and make progress in arresting the disease. The last bird

died two weeks after the outbreak began.

Two vaccinations were given all young fowls and three to four to the sick birds. Two vaccinations were given the adult birds and the balance of adult fowls were given one injection each of 1 cc. vaccine. In all 673 range chicks were vaccinated, 467 adult fowls, 11 waterfowls, consisting of 9 ducks and 2 geese, one turkey and 12 pigeons, a total of 1,160.

Symptoms

The symptoms as observed in this outbreak and among young fowls is as follows: In the initial stages the symptoms will be overlooked if the birds are in any way frightened. Observed from a safe distance they seem dozy, which, of course, must be differentiated from sleepiness. When startled they show an abnormal facial expression, the head displays nervousness, and if driven they showed weakness in the gait. These symptoms progressed until prostration was complete. In advanced stages they would sit for a moment with head and tail down and on moving showed great weakness. Loss of flesh was very rapid. They became partially comatosed and if sitting the head fell forward till the beak touched the ground. At this stage there is a complete loss of the use of the neck muscles and they could not walk. Death came without a struggle or after a spasm. The appearance is unkempt and a sulphur-colored liquid discharge from the bowel.

Gross Pathology

At autopsy the carcass is usually observed to be in an emaciated or poor condition. There may be present edema or swelling, especially in the chest in the region of the heart or the thin, liquid effusion may be so great as to extend over the liver. The fluid in the heart sac may be increased in quantity. More rarely there may be abdominal hemorrhage.

The liver was always enlarged and blood dripped from the sectioned surface. It is friable and tears easily and accounts for internal hemorrhage. The kidneys were congested and the sectioned surface shows a grayish color indicating degeneration. The heart was congested as shown by the blood vessels standing out full and red. The heart presents a parboiled appearance. The spleen is normal in size.

Macroscopic Pathology

Degeneration is marked in all of the organs, as the liver and kidneys. This in some instances is terminating in the dissolution of the cells of the organ.

Congestion, both in the veins and arteries, is always observed in the liver, kidneys, and heart. This accounts for blood dripping from the cut surface of the liver.

The whole microscopic picture is one of intense toxic poisoning.

Five other outbreaks were reported showing the value of vaccination in checking the disease.

A DEMONSTRATION OF THE PRODUCTION OF DEFICIENCY DISEASE

Chickens and pigeons were given a feed mixture containing millet, Kafir corn, Canada peas and wheat. This mixture had previously been heated at 40 pounds steam pressure for one hour. This destroyed all the vitamins. To this there was added polished rice (like that for table usé) and tapioca. In thirty days the pigeons came down with typical symptoms of deficiency disease due to the lack of water soluble B, a condition of polyneuritis. The first symptoms are those of nervousness, later when the bird was excited its head would turn to one side and at times over the back.

Note in Fig. 1, the inability to handle wings properly, head thrown back. This bird was given thirty grains (2 grams) wheat germs and on the following day had recovered. If it had

TABLE I
CLASSIFICATION OF VITAMINS

Solubility	Name	Function	Source
Fat A	Antiophthalmic	Growth promoting Prevents ophthalmia	Butter, milk, egg yolk, green leaves, glandulas especially the kidneys and liver, cod liver oil, small amounts in yellow corn, doubtful in white corn.
Water B	Antineurotic	Growth promoting Prevents beri beri and polineuritis	Eggs, milk, fresh vegetables, fruits, alfalfa, clover. More abundant than "A" except in milk and germs of seeds.
Water C	Antiscorbutic	Prevents scurvey	Fresh and canned tomatoes, oranges, lemons, sprouted grains, raw milk from cows on fresh pasture.
Fat D	Antirachitic	Prevents rickets, regulates calcium, phosphorus assimilation and deposition	Cod liver oil and green feeds.

not received a feed furnishing the lacking vitamins, it would have been dead by that time.

Fig. 2 shows a pigeon which was in a similar condition as the pigeon in Fig. 1, and recovered in 24 hours after receiving 30 grains wheat germs.

Table I gives the classification of vitamins.

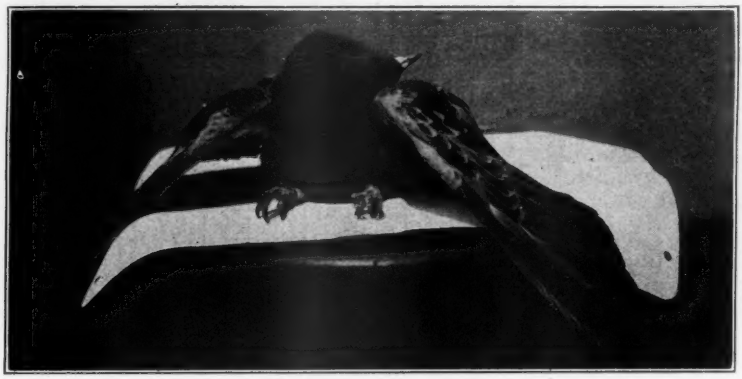


Fig. 1. The condition in this pigeon was produced by feeding on grain not containing vitamins. It is a case of deficiency disease or polyneuritis.

Study this table carefully and see that your feeding has a sufficient supply of those feeds supplying fat soluble A and D and water soluble B. It is quite possible that future experiments will show fat soluble D to be essential to fertility in breeding hens and is now known to be essential for proper growth of chicks. There may be many other feeds that contain these vitamins which time and experiments alone will tell.

VITAMIN DEFICIENCIES

The part which a deficiency of substances called vitamins plays in the growth of animals and birds and the relation between these deficiencies and paralytic diseases of animals and birds has received more attention during the past two years.

Vitamins are supplied only in the feed. It is important then to recognize those feeds low or totally deficient in vitamins so that normal rations can be compounded. Where an adequate ration of grains is fed, supplemented with good pasture or succulent fresh, leafy vegetables or legume hay of high quality there is little danger of vitamin deficiencies.

On the other hand, when a preponderance of a single grain is fed in combination with a poor quality of hay or without supplementary feeds, the effects of vitamin deficiency will be apparent. The exclusive use of corn, especially white corn, or a too large proportion of corn in the diet will bring results definitely related to the deficiency of vitamins.

It is true that corn is low in calcium and does not supply the proper animo acids for growth, but it is a rich carbohydrate food. With experimental animals, the addition of calcium salts and casein to a corn diet delays the onset of vitamin deficiency symptoms but does not prevent their occurrence. The effects of vitamin deficiencies are cumulative and certain. Good proteins and minerals in the diet act as "vitamin sparers" but are not substitutes for vitamins.

Slow growth is perhaps the most common of the less pronounced symptoms of vitamin deficiencies. Of the more readily recognized symptoms, there is the roughened condition of the hair of animals and poor feathering of birds; low egg production and poor fertility of eggs, stunted pigs and chicks, small litter, abortion and dead pigs and less common, but never-

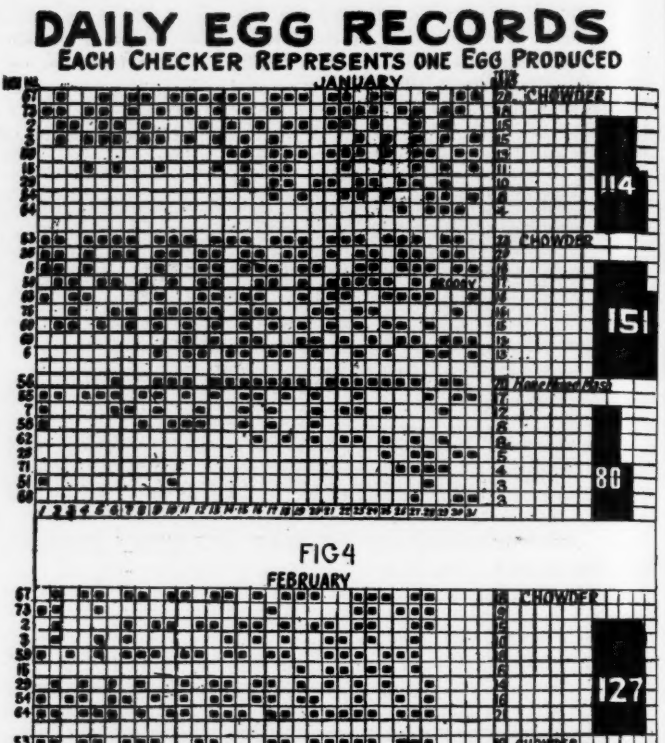
Fig. 2. This pigeon was in same condition as the pigeon above and was given 30 grains wheat germs which supplied the missing vitamins. He is now well.

theless actually occurring, conditions of paralysis and ophthalmia. Recent work indicates that many of the rations fed to young chicks are deficient in the vitamin that protects against so-called leg weakness.

It is not with total deficiency of vitamins that the feeder must be most concerned but with partial deficiency, for total deficiency is probably not often met with.

Experimentally, polyneuritis in fowls is produced on a diet of polished rice; on tapioca or on a diet that has been autoclaved to destroy the antineuritic vitamin. These latter diets may be adequate in all other essentials of a normal diet. Where the deficiency of vitamin is associated with an excess of other factors, particularly of carbohydrates, the onset of deficiency disease is rapid.

Vitamin deficiency is of more common occurrence in poultry feeding than is generally recognized. Some rations advocated by men of prominence have been found very deficient in vitamin when tested for their value as egg producers. (The chart (Figs. 3 and 4) illustrating egg production brings out this fact very clearly.)



Figs. 3 and 4. A chart illustrating the difference in egg production of feeds ample in vitamins and feeds not ample in vitamins. Those flocks receiving sufficient vitamins in the feed laid more eggs than those curtailed.

As a part of preventive veterinary medicine, the veterinarian should give thought to the part which a deficiency of vitamins play in the etiology of disease. These unknown chemical substances, acting as they probably do in the role of stimulators, enable the animal body to build up a resistance to infection from bacteria. Vitamins are not a fad, are not the most essential factor in nutrition, but are so essential that the animal organism cannot do without them.

An interesting chart was presented (Figs. 3 and 4) in which two tests were made on laying hens where proper vitamins as well as mineral, protein, carbohydrates and fat were supplied by the ration designated as chowder and a control designated as home-mixed mash deficient in vitamins.

A DEMONSTRATION OF LIMBERNECK

True limberneck is due to the Bacillus botulinus and is called botulism. Of this organism three kinds or types are recognized, types A, B, and possibly C. The germ gives off a severe toxin, poisoning the brain and spinal cord, causing loss of the use of the muscles of the neck, the neck then becoming limber from which it gets its name of limberneck. The germs live in decaying animal and vegetable matter from which fowls become infected and contract the disease. Fowls contract the disease only through eating the food containing the germs.

In this demonstration three fowls were used, one was given one-half cc. or seven drops of the liquid from the bouillon culture of the B. botulinus, a second was given fifteen drops, and a third fifteen drops of the liquid toxin and thirty drops of B. botulinus antitoxin.

The antitoxin was prepared by repeated inoculations of increasing quantities of the B. botulinus toxin to a horse and after a few weeks drawing and preparing the blood from this horse as in the preparation of other antitoxins. The bird called the control and receiving the toxin and serum at the same time remained well and the one receiving seven drops toxin only came down in eighteen hours, and the one receiving fifteen drops toxin came down in fifteen hours with typical symptoms of the disease and died.

Some other diseases must be distinguished from true limberneck or botulism, among them being ptomaine poisoning, acute fowl typhoid, and some other blood diseases.

Following this demonstration Dr. Saunders told of a germ resembling in many respects the B. botulinus and which he has called the Botuloid organism. This germ he said caused a disease similar, if not identical, with the infantile paralysis of children and said children got it by eating lunches infested by the larva of the green fly. The mother fly must eat of material containing the germs at least three hours before the eggs are laid. The germs are carried through the egg to the larva and the larva cause the disease. He said while true limberneck was always fatal unless treated, fowls with this infection may resist it or may get well. There was shown fowls, a guinea pig, and monkey with this disease.

Those who are always trying to dig graves for others often have no time left to do something for themselves.

METHODS OF DIAGNOSING AND RECOGNIZING TUBERCULOSIS OF FOWLS

A coop of chickens known to be affected by tuberculosis was exhibited. These birds had been previously injected with bovine tuberculin. One drop was injected into the skin of the wattle.

A bird passed around showed a doughy swelling, a typical reaction.

Tuberculin made from the avian strain of the tubercle bacillus was recommended. A hen with abdominal cavity opened was passed around. This showed the small, hard, white tubercles imbedded in the liver substance and in the spleen.

THE ELIMINATION OF WHITE DIARRHEA

A coop of hens infected with the organism of white diarrhea, or Bacterium pullorum was exhibited. The organism had been isolated from the ovaries of some of the hens of this flock.

A fowl was passed around showing the condition of the ovary of a hen infected. The abdominal cavity was laid open to expose the ovary. The ovary was still functioning to a small degree and showed two ova with nearly mature yolks. There were a dozen or more blighted yolks that had undergone degeneration, small, shrunken, irregular in shape, dark in color, containing a putty-like material and attached by long, slender threads to the body of the ovary.

Breeding hens that are infected can be told by the Widal test and eliminated. All chicks a month old that have not passed through the disease should be put on new ground with new house and start a new uninfected flock. All chicks passing through an attack of white diarrhea should be toe punched or otherwise marked and later be sold for food purposes.

The editorial staff acknowledges the valuable co-operation of Professor Kaupp, chief of the poultry clinic, without whose assistance the publication of this detailed report would not have been possible.—Managing Editor.

Spraying of dairy cows during the fly season with an efficient fly repeller increases the amount of milk and is regularly practiced by good dairymen.

"Passing The Buck"

Edward M. Boddington, Attorney for The Associated Serum Companies of America

THE honest truth would prevent much of the present criticism that is occasionally brought onto the veterinary profession and commercial houses occasioned by hasty conclusions and "passing the buck" and blaming the United States licensed producers of the product for the losses attributed to hog cholera immunization.

Taking into consideration that phase of veterinary practice which has to do with the administration of anti-hog-cholera serum and hog-cholera-virus, and we must, at the outset, realize the fact that many authorities, the bureau of animal industry included, recognize numerous distinct diseases in swine other than hog cholera. "Flu" is the newest acquisition to the list of hog diseases, having been recently recognized by the bureau of animal industry as a separate and independent disease from hog cholera. Infectious enteritis, infectious necrotic enteritis, infectious pneumonia, swine plague, "flu" and others with which the veterinary profession are as yet not familiar, are represented as distinct and often concurring causes of swine mortality. Certainly anti-hog-cholera serum is not recommended to prevent anything but hog cholera. Where you find other lesions and conditions existing following a so-called "break," it is unfair to your profession and unfair to the biological house and unfair to the owner of the hogs to condemn the product because, in your opinion, it failed to cure or prevent all the diseases that the particular hog or herd of hogs was susceptible to at the time of vaccination.

Case at A. V. M. A. Clinic Illustrates Point

It is interesting to note a diagnosis made on August 31, during the postmortem of a hog at the excellently conducted clinics of the A. V. M. A. at St. Louis. A hog was posted and had what may have been satisfactorily diagnosed as one or all of the three following conditions, dependent upon the viewpoint of the diagnostician, i. e.:

1. Multiple abscesses of not less than two weeks' duration in the lungs.
2. Hemorrhagic septicemia in a sub-acute form.
3. Acute hog cholera following vaccination with anti-hog-cholera serum.

This hog was apparently normal and had a normal temperature when vaccinated. What conclusions would you draw from such findings following field vaccination? You might call it a "break" and blame the serum. This would be ignoring the physical factors and doing not only the veterinary profession but the commercial houses and the hog owner an injustice. You frequently do find complication of diseases following so-called "field breaks." Anti-hog-cholera serum is only designed and represented by the producer for the prevention of hog cholera. Upon finding conditions as above indicated, a few veterinarians have charged serum companies with negligence in the preparation of the serum but such charges have never truthfully prevailed. It is one thing to charge negligence in the manufacture of a biological product and it is quite a different thing to prove negligence.

Envisage a Case in Court

Under conditions following a "break" if the farmer were advised that the serum killed his hogs, naturally he would seek redress in court for his losses. Consider for a moment the stage setting on the day of trial. The veterinarian who made the erroneous finding and gave the erroneous advice sticks to his story and diagnosis. Testimony is adduced that the hogs died and they were worth so many dollars, and the thoughtful judge sustains a demurrer and the case is dismissed. Or the judge, who is mistaken about the rule of law which applies in such cases and erroneously believes that negligence can be inferred, permits the case to go to the jury. The defendant company shows every detail of production and testing of such product under government supervision and authoritative veterinarian opinion is adduced diametrically opposed to the conclusions reached by the practicing veterinarian as to the cause of the death of the hogs. The jury of course returns a verdict in favor of the farmer and against the serum company. WHY? Not upon the facts in the case but because the judge erred in his idea of what constitutes negligence, and the jury believing there must be some liability or it would not be checked up to them, finally finds in favor of the plaintiff farmer and against the defendant biological company for the full loss claimed.

The Common Law and Some Court Decisions

Let us pause a moment and consider that rule of common law regarding negligence

which is as old as the Anglo-Saxon race: "Negligence cannot be presumed. It must be proven." All cases where a U. S. licensed plant has been involved where the jury found in favor of the plaintiff have been reversed in the court of last resort of the state in which such case was tried. The Court of Appeals of Missouri followed this pioneer rule and said: "The mere fact that hogs died from the use of anti-hog-cholera serum and virus in the way it was intended to be used, does not establish negligence in its manufacture." The Supreme Court of Iowa said (162 N. W., 620). "Plaintiff had the burden of showing defendant's negligence and that such negligence proximately caused his alleged losses," The Iowa Court said in reference to the serum business: "The business is well hedged about by the safeguards of governments, both state and national; adventurers cannot engage in it, as only men of competent experience can obtain license therefor; the plants are subject to continuous official inspection; the power of governmental departments over them is practically unlimited. It is greatly to the interest of the public that effort and experimentation go on; a great degree of success has been attained." The Supreme Courts of Iowa, Missouri, Washington, Virginia, and many local state judges have unerringly held that a case staged as above indicated does not establish any liability whatsoever against a serum company. The mere fact that hogs die following vaccination does not predicate or establish any negligence on the part of the manufacturer of the serum used. Past history discloses that the farmer, following ill timed advice not only loses his hogs as a true result of the complications indicated in the above and kindred "field breaks," but the farmer loses his time, energy, money and court costs and finally loses his respect for the originator of the erroneous law suit idea. Of course the biological producer loses the veterinarian as a customer, is advertised as a defendant for a while and loses some business in that community, but such producer is finally vindicated by winning the law suit on its merits.

Veterinarian Loses Prestige

What does the veterinarian lose by a mistaken diagnosis and "passing the buck" as herein indicated? The veterinarian loses the good will of the stock owner, is advertised in his community as "not knowing his stuff" with a resultant loss of clientele, and is known to other biological houses as one who endeavored to frame a law suit, not necessarily intentionally but from following the course of least resistance, and acting under his first implse. In other words, the veterinarian has damaged himself and his profession beyond measure by reason of "passing the buck."

Truth the Best in the End

A true statement of facts and conclusions based thereon is far better than a false one in any science or profession, even though the truth isn't as popular as the "rosy" possibilities of recovery for losses sustained in a law suit. In the end, "passing the buck" for animal losses off onto a U. S. licensed commercial house amounts to a condemnation of your own Government and its scientific safeguards for your protection to prevent the barter and sale of any contaminated, dangerous or harmful product. "Passing the buck" as herein indicated, instead of relating the truth, will ruin a veterinarian's business in the long run and will not cause that spirit of co-operation to prevail which is essential to the triangular factors involving the live stock industry of the country, that is, the veterinary profession, the U. S. licensed biological producers and the farmer.

A PLEA FOR ALCOHOL

Hardly a day passes that I do not need alcohol. In almost every prescription one would like to use it, but is forced to substitute something less efficacious.

Some ten prescriptions in your little book, "Veterinary Prescriptions," contain alcohol, and one would have to be an expert pharmacist to know how and when to use the denatured alcohol now on the market at the modest price of $1.00 per pint.

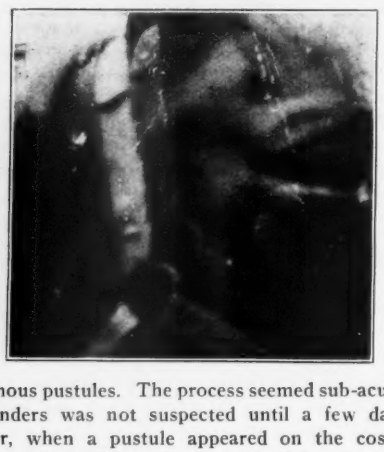
I have attempted to obtain a permit for one gallon of alcohol from the state prohibition authorities, but they insisted upon my filling so many forms, attorneys' signatures, and judges recommendations, that it is obvious to me they deliberately obstruct one from obtaining it without actually refusing.

I corresponded, filled out forms and appealed before notaries for three months and eventually realized that it was all a waste of time on my part.

Here is a matter for the A. V. M. A. to take up. I for one, am disgusted with myself, using water instead of alcohol and am tired of the poor results one obtains as a result of this impractical legislation, which has only proven beneficent to the bootlegging fraternity.—Old Virginia.

A CASE OF CUTANEOUS GLANDERS

The horse, whose left hip is shown herewith, was an ordinary work horse used in a single delivery wagon. The character of the deliveries was such as to require a great deal of backing with the well-loaded wagon. The breechment caused an ugly, sloughing sore (a sitfast), to develop on the left hip. When the slough was cast off it left a depression of the same size that showed no tendency to cicatrize as promptly as such wounds should, but instead became the center of a remarkable pustular area that widened slowly but surely. The pustules were of different sizes and when ripe discharged a creamy pus. There were no san-



guinous pustules. The process seemed sub-acute. Glanders was not suspected until a few days later, when a pustule appeared on the costal region along the cartilages of the false ribs and another in the tibial region that did not seem to have continuity with the initial seat of the trouble.

The horse was given intra-palpebral mallein-ation with positive results. The reaction was pronounced and persisted for several days. The photograph of the eye was taken at the end of the third day. During the second day the swelling was larger and the discharge more profuse than is shown in the illustration.

Chicago, Ill. C. O. Kroener.

PREPOTENT PRECOCITY IN A JERSEY CALF

Please find enclosed a photograph of a two months old registered Jersey heifer calf showing an unusual udder development for an

animal of that age. Its mother is a two-year old, with a butterfat record of 300 pounds. The owner of these youthful prodigies is H. S. Stein, Fort Madison, Iowa.

West Point, Iowa. L. A. Schmidt.

GRASSHOPPER POISONING KILLS CATTLE

In investigating the cause of death in a herd of cattle, of which 15 had died and others were fatally ill, Dr. B. F. Davis, state veterinarian of Wyoming, with the aid of L. E. Walter, state chemist, discovered that the deaths were due to arsenical poisoning. Undigested food in the stomachs was found to contain lethal amounts of this drug and the source was found to be a grasshopper poison that had been used to kill these pests.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Mastitis and its Treatment

NOTWITHSTANDING that mastitis seems to be a subject on which much has been written scarcely a day passes that our mail does not bring us an inquiry as to just how to handle mastitis in practice. Those who write us do not seem to be interested at all in its pathology, evidently having read sufficient of that phase of the subject, but they put it to us something like this: "How do you handle your different types of cases in your own practice?" This brief article or statement consequently, is written for those who are interested largely or solely in the treatment of mastitis. I will attempt here to outline a method that is based on years of experience in an extensive cattle practice.

The So-Called "Caked" Udder

The handling of mastitis will depend somewhat upon the character of the particular case to be treated. The rural practitioner is well aware that he is sometimes called to give advice as to the treatment of udders in deep-milking cows that have recently freshened, where there is more of a congestion than a true inflammation. The udder is very large, the skin red and one or more quarters may be hard or "caked" as it is commonly termed. The milk may be bloody or contain clots of casein. We do not look upon those cases as infectious, and advise bathing with warm water, milking several times daily and very gentle massaging with some non-irritating ointment.

For these cases we use an udder and teat ointment which contains zinc oxide as a base in which is incorporated iodin and aconite. This is a soothing rather than an irritating preparation.

Do not use pressure enough to rupture the capillaries, which are already so filled as to be ruptured easily and cause a sanguinous condition of the milk. After each bathing and milking it is well to cover the congested area with ointment.

Internal Medication

Withhold all feed excepting something light and laxative. See that the bowels are loose and, if necessary, give a mild cathartic, containing salines, carminatives and stimulants. Never give large drastic doses of salts to a cow. It is far better to repeat the cathartic in 10 to 12 hours if necessary. In addition to this we always give a preparation containing a large amount of hyposulphite of soda and a full dose of ginger and nux vomica. The hyposulphite of soda being eliminated by the udder is assisted by the stimulant and the diuretic action of other drugs.

This treatment usually relieves congested udders in 36 to 48 hours.

Suspend With Many-Tailed Bandage

If the udder is very large and pendulous, so much so that it has broken some of its attachments to the abdomen, which naturally interferes with its circulation, it is well then to support the organ with a broad many-tailed bandage tied over the back and rump, padded well around the teats with cotton or bran so as not to cause necrosis from pressure, otherwise any attempt to sling an udder is not advisable since at best it is not an easy or practical thing to do, but a suspensory will be of an advantage to an unusually heavy and pendulous udder and in such cases should be used.

Treatment of Infectious Mastitis

In the case of infectious mastitis the affected animal or animals should be isolated at once so as to prevent the spread of the infection in the stable and the herd.

Disinfect the entire stable at once so as to safeguard the other animals. Scrub the platforms with hot sal soda solution. It is well to milk the infected quarter or quarters into a pail containing an antiseptic and so avoid recontaminating the stables. Medicate each case the same as outlined for congestion of the udder.

Local Treatment

As to local treatment, if it is practical to have the affected quarters bathed with very warm water, massaged and milked almost constantly during the day for the first three or four days, this is by far the best method.

We then advise frequent applications of a stimulating liniment such as the ordinary cream or white liniment. This stimulates the circulation and with thorough massaging helps to break down semi-organized tissue. At night apply a thin coating of the ointment, rubbing it in thoroughly.

An ointment that we prefer is one composed of Churchill's iodin, aromatic sulphuric acid and oil of wintergreen, incorporated in a lanolin base.

If this practice can be followed faithfully, results are so positively satisfactory that the owners of valuable cattle never object to the attention or trouble.

We realize, however, that where dairying is not the important factor on a farm, or where help is scarce, or the owner has perhaps but the one animal and can give it attention only at night and morning, that the procedure outlined above is not practical. Such cases are treated by first giving a cathartic and liberal doses of the preparation before mentioned night and morning. We apply the above mentioned ointment generously, rubbing it well into the affected parts each day for three days and then every other day as often as may be necessary. Mild or recent cases even under this meagre attention usually respond in a week or so. Chronic or aggravated cases, of course, require more prolonged treatment.

Differentiation Not Always Easy

The differentiation between the two common forms of mastitis—parenchymatous and strepticoccic or interstitial—is sometimes very readily made and other times not. The parenchymatous form is characterized largely by discoloration of the glandular secretions and it is said that organisms of the colon type are frequently, if not constantly, associated with this form.

Strepticoccic mastitis may be very acute, painful and sudden in its onset or there may be small infected areas in the udder several days before the veterinarian is called, the milker reporting possibly that the animal had shown some uneasiness while being milked for the past few days. Consequently, in practice we do not always attempt to make a differentiation.

Biologic Treatment

As to bacterins, like in our pneumonias in cattle, we prefer the mixed bacterins because they insure much better results in the case of an error in diagnosis or in mixed cases.

We give mastitis mixed bacterins in every cast of mastitis where it is practicable night and morning for the first two or three days. If the case is not responding by this time we double the dosage, giving but one injection a day for a few days and then perhaps every two or three days until the udder has apparently recovered. The more chronic type, where animals are not so valuable or the individual case less severe, bacterial treatment every two or three days, coupled with good medication, is usually quite satisfactory.

Hints on Prognosis

As is generally known, the quarters which suffer severe infection often "go dry," and the question as to whether or not such quarters will ever function again normally, will depend solely upon how the case responds to treatment and whether the gland suffers permanent damage.

A fair barometer for the veterinarian to go by when asked if he thinks a quarter will come all right when the animal freshens again, is what he finds upon manipulating the quarter. If the gland is soft throughout and he cannot detect any hard or indurated areas, he is pretty safe to predict that when the animal freshens again the function of the gland will be restored. This is so in an overwhelming majority of cases, even though the quarter seems to have considerably atrophied.

In the case of very valuable animals, particularly show animals, where the owner is fearful that the quarter will be so affected as to show asymmetry, it is well to advise daily massaging during the period when the cow is dry, with some simple preparation, such as equal parts of olive oil and alcohol. By so massaging, the affected gland gets more stimulation than the unaffected gland and is therefore aided in developing equally with the others.

We occasionally see a case that apparently recovers but keeps recurring in a sub-acute form sufficiently often to be very annoying. Such cases should be well blistered during the dry period and receive a thorough treatment of bacterins and internal medication, keeping in mind that this treatment is far more effective when the udder is not active.

In suppurative mastitis, surgical draining is, of course, indicated. If considerable of the gland is involved around the milk sinus, a simple way is to amputate the teat, which gives free drainage and insures no further annoyance by health authorities.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Diseases of Swine*

By Edw. A. Cahill, V.M.D., Indianapolis, Ind.

IT IS quite generally agreed that there is no problem confronting the veterinary profession at this time which is more serious than the control of the diseases of swine. That these diseases are more prevalent than for many years is generally appreciated, and the problem exists mainly because of lack of unity among the profession as to the exact nature of these diseases and methods for their control.

The seriousness of this problem is enhanced because of the fact that for a period of approximately ten years after the discovery of anti-hog cholera serum the control of the infectious diseases of swine did not constitute a serious problem and it was at that time the concensus of opinion that hog cholera was the only serious disease of swine and that if this were controlled other diseases would have little or no significance.

Problem More Serious Than Formerly

During the past four years this condition has been rapidly changing and methods which were efficacious previously now seem ineffective as a result of which the percentage of sick swine and unsatisfactory results following their treatment has assumed serious proportions. In times past the simultaneous treatment for hog cholera could be administered to healthy swine with results which were entirely satisfactory. Likewise, anti-hog cholera serum could be administered to animals in herds where the disease existed, and in the majority of cases the losses were a negligible factor. More recently under the changed conditions above referred to there are many instances where apparently healthy swine have sickened subsequent to immunization and where anti-hog cholera serum when administered to sick swine has failed to check the losses. On account of these changed conditions an enormous amount of investigational work has been conducted in an effort to determine the cause for this condition. The conclusions arrived at by different investigators have varied considerably, as a result of which much has been said and written which instead of clarifying the situation only serves to make it the more complex.

Chaos Not Yet Removed

The discussions on the subject have at times been more acrimonious than enlightening and one can hardly dispute the statement that at the present time the subject of diseases of swine is in a state of utmost chaos. There are those who still believe that the only serious disease of swine is hog cholera and attempt to treat all outbreaks of disease accordingly. Such efforts have been entirely without success and have served to cause doubt as to the reliability of the simultaneous treatment. There are others who diagnose certain diseases which have long been recognized but whose existence as entities have been questioned by some.

This divided opinion has been further intensified by some who for various reasons have originated new diseases regardless of the fact that the justification for the same were as a rule not well-founded. The rapidly increasing difference of opinion has led to the only possible result, viz.: uncertainty and chaos in the minds of the general practitioner.

This in itself would be serious enough, but as in all important matters where professional opinion is divided and results are not obtained our uncertainty is reflected in public opinion.

Opinions Too Varied

There never was a time when unified professional opinion and ability to control swine diseases was as necessary as at the present when the subject of farmer vaccination is being agitated on all sides.

Vaccination by Farmers

The rapidly increasing demand for farmer vaccination may be attributed to two factors: first, the stock owner has been or thinks that he has been overcharged by veterinarians who had immunized his swine; and secondly, the inability of the veterinary profession to elim-

* Read at the University of Minnesota Short Course July 13, 1922.

inate post-vaccination trouble, or even explain our failure to obtain results. I am certain that in many instances our inability to control these conditions is responsible for more farmer vaccination agitation than is the fee which has been charged.

It is being said by farmers in every state in the Corn Belt that they could vaccinate their own hogs without greater losses than has followed the work of their veterinarians. Such a belief is unwise and there can be no doubt that farmer vaccination would be followed by much greater losses than have occurred in the past. It is quite probable however that this feeling on the part of the public can be destroyed and public confidence regained only by our proved ability to understand and control swine diseases.

The duty to become more proficient is therefore incumbent on every veterinarian who indulges in swine practice, not only for his own benefit but also for the good of the entire profession, since it is but natural that when any class of individuals fails to obtain the results for which he expends money that he will look elsewhere for relief. Unless we can demonstrate our ability to accomplish these results better than the laity and unless this can be done in the very near future it seems quite probable that the agitation for farmer vaccination will increase rather than decrease regardless of what else we may do.

A BRIEF ON THE COMMON SWINE AILMENTS

It is manifestly impossible in the time which is allotted for such a discussion to properly present a comprehensive study of the diseases of swine and it is felt that this is not necessary since in the opinion of the writer the difference between success and failure to control swine diseases is dependent upon a true appreciation of a few factors which are apparently responsible for most of our confusion and which differ from the classic textbook teachings of swine diseases. In order that our attention may be correctly focused on these factors a short review of the history of swine diseases seems essential.

Epoch-Making Discovery of Dorset

A decade or more ago it was believed that two microorganisms were of great importance in so far as they applied to swine diseases. One of these, the Bacillus suisepticum was considered responsible for swine plague, which was then believed to be extremely prevalent. The other, Bacillus suipestifer, later referred to as the hog cholera bacillus, was believed to be the causative agent of hog cholera. A short time later our opinions regarding swine diseases were modified considerably due to the epoch-making discovery of Dorset and his coworkers that hog cholera is caused, not by B. suipestifer, but by a filterable virus.

It was then assumed that these two organisms, B.suisepticum and B.suipestifer together with others which are normally present in the flora of the respiratory or intestinal tracts were not as significant as formerly supposed and that they were capable of causing pathological changes only if they acted symbiotically with hog cholera virus.

Discovery Begat Immunization

With the discovery of the filterable virus of hog cholera came the discovery of a method of producing an immune serum capable of immunizing against hog cholera. From an economic point of view this discovery was of paramount importance because it has resulted in the protection of thousands of swine which would otherwise have died from cholera. History shows that the practical application of many important discoveries, particularly those of medicine, is retarded by the extreme enthusiasm with which the discovery is received, since we invariably hope for and expect more from such discoveries than the possibilities justify.

The attitude adopted by our profession following the discovery of the cause and means of preventing hog cholera has been no exception to this general rule.

Mistaken for a Panacea

Not content with the wonderful ability of anti-hog cholera serum to control hog cholera, the most serious of all swine diseases, we allowed ourselves to believe that it would act as a panacea for all swine diseases. We were pleased to believe that if we controlled hog cholera that other diseases would have little or no significance and that B.suisepticum, B.suipestifer and associated organisms would be incapable of causing pathological changes unless associated with the filterable virus of hog cholera. For several years this belief was apparently substantiated because of the fact that most sick swine proved to be affected with hog cholera and in the majority of cases anti-hog cholera serum controlled the losses. For several years subsequent to the acceptance

of this belief there were occasional cases in which the serum failed to control the losses or in which apparently healthy animals became sick after immunization.

"Breaks" Were Not Understood

These cases represented but a small percentage of the herds treated and unfortunately were seldom carefully investigated since they were considered as failures of the serum or virus to obtain the desired results. In other words these cases were spoken of as hog cholera breaks and while a small percentage of such cases might be explained in this manner it is to be regretted that more study was not given to such cases. In the light of recent developments there is now every reason to believe that we were unknowingly dealing with typical cases of the diseases which before the discovery of the filterable virus had been considered of great importance and which during the past few years have assumed serious proportions.

During the past four years these cases have become exceedingly numerous and it has been observed that many animals which were apparently healthy at the time of immunization have developed post-vaccination sickness and that in other cases anti-hog cholera serum when administered to sick swine failed to check the losses, particularly in herds where intestinal and pulmonary symptoms and lesions were pronounced. It thus became obvious either that the serum treatment was not as effective as formerly or that swine might be affected with disease other than cholera.

Experiments Clear the Situation

Since that time an enormous amount of work has been conducted by investigators to determine which of these conditions prevailed and while there still remains much to be learned it can be stated that the results of the experimental work which has been conducted combined with the knowledge obtained by field investigations and results obtained in practice offer considerable information which is essential to the successful control of swine diseases.

Itemized Conclusions

The following conclusions drawn from these varied sources are of paramount importance and are indispensable to the successful control of swine diseases:

1. Hog cholera still continues to be the most serious of all diseases of swine.

2. Hog cholera immunization has not lost any of its effectiveness and is as valuable now as at any previous time. Any propaganda or beliefs which lessen the confidence of the public in this valuable immunizing procedure will naturally reduce the number of immune animals and increase the percentage of susceptible swine, thus constituting a serious menace to the livestock industry.

It matters not whether this result be brought about by the so-called standpatter who still insists that all extensive losses of swine are caused by hog cholera or whether it be brought about by irresponsible persons holding erroneous beliefs as to the existence of disease, the presence of which has not been proven. There is a happy medium which must be adopted by those who would successfully control swine diseases.

3. That diseases other than cholera do exist and are both widespread and serious, particularly since it is frequently difficult to differentiate between these and hog cholera and since failure to properly differentiate frequently causes discredit to be thrown upon hog cholera immunization.

4. That lesions formerly considered diagnostic of cholera are known to exist in other diseases and that because of this differential diagnosis is difficult and frequently erroneous.

5. That swine more than any other specie of animals possess an uncanny ability of harboring chronic pulmonary or intestinal lesions although appearing perfectly healthy.

6. That most post vaccination troubles in swine are due to causes other than cholera and that autopsy reveals chronic lesions which were present at time of vaccination. This should not eliminate the occasional true cholera break which does occur.

7. That hog cholera should always be suspected regardless of symptoms or lesions if the affected animals are susceptible to cholera. Conversely if the affected animals have been properly immunized and they display the syndrome of other diseases they should be treated for such since treatment for cholera will be devoid of results and will destroy confidence in the simultaneous treatment.

8. That the majority of our profession have been negligent in so far as they have failed to attach sufficient importance to the question of sanitation.

9. That parasitic infestations in swine are rapidly increasing and must receive our serious consideration since in addition to the

damage for which they are directly responsible, they so devitalize the system that bacterial infection is simplified.

HOG CHOLERA

While this disease still continues to be the most serious of all swine diseases experience during the past few years has conclusively demonstrated that cholera is not as easily diagnosed as was formerly supposed. Some have maintained that cholera is a lesionless disease and while this opinion has not been generally accepted it msut be conceded that the disease is devoid of typical specific lesions which are never observed in other diseases.

The Moot Question of Postmortem Lesions

Many have felt safe in making a diagnosis of hog cholera provided postmortem examination evidenced the presence of petechial hemorrhages throughout the body or button ulcers on the intestinal mucosa, or both. This erroneous attitude is undoubtedly responsible for more of the chaos and uncertainty which now applies to swine diseases than any other factor.

Petechiation Not Pathognomonic

The only lesions that can be attributed to the filterable virus are those of an acute septicemia, viz.: petechiation, but unfortunately this same condition becomes manifest in animals suffering from other conditions and petechiation is an extremely prevalent condition in septicemias caused by streptococcus, B.pyocyaneous, B.paratyphosus B., B.suisepticum, et al.

Petechia are also observed in animals which have been subjected to extremes in temperature; in those which have been fed on excessively oily or acid material, and in those which have been fed on a ration too rich in proteins, as well as in individuals suffering with parasitic infestations.

It should require little discussion to convince one in view of these circumstances that while petechia are the most constant lesion observed in swine affected with hog cholera that a diagnosis made on this widely prevailing phenomena is most insecure and undesirable and that there is no one lesion in cholera sick swine which can be accepted as conclusively diagnostic.

I would ask you to visualize the condition which you observe on autopsy of a cow affected with hemorrhagic septicemia and to ask yourself if this same condition were present in swine how frequently it might be mistaken for hog cholera.

Button Ulcers Also Deceptive

A second pathological change which is frequently responsible for an incorrect diagnosis in swine is the presence of button ulcers. At one time it was believed that hog cholera could be diagnosed in the presence of this pathological condition. It has, however, been quite conclusively proven that button ulcers are caused by bacteria normally present in the intestinal flora and that they are not caused by the filterable virus.

Those whose experience permits them to autopsy large numbers of pigs know that button ulcers are observed alike in cholera sick, cholera immune and susceptible swine. In swine button ulcers are frequently observed following any intestinal infection although the remainder of the herd remains well and may later be demonstrated to be susceptible to hog cholera.

Diagnosis Requires Careful Study of the Whole Situation

What then is the present status of the lesions formerly considered diagnostic of hog cholera? In so far as button ulcers are concerned it may be said that although these are frequently observed in swine affected with hog cholera a diagnosis cannot be made on this point since the ulcers are due to the action of certain bacteria ordinarily present in the intestinal tract and may be observed in swine not affected with hog cholera. In so far as petechia of the various organs are concerned these may be present in swine affected with hog cholera or they may be present in animals affected with numerous other diseases or conditions. A correct diagnosis of hog cholera is beset with many difficulties and it can safely be made only by a thorough study of the history, symptoms and post mortem lesions. Most careful investigators are at this time of the opinion that more dependable information for diagnostic purposes is obtained by an extremely thorough study of the symptoms and history than by placing too much dependence upon post mortem lesions. While the post mortem lesions of cholera closely resemble those found in other diseases the history and symptoms are distinctly different. In view of these circumstances greater consideration should be given to a thorough study of the history and symptoms without lessening our post mortem investigation.

Hemorrhagic Septicemia

Although the existence of this disease as an entity is not conceded by all investigators the majority are now in accord in believing that it does exist as an entity and is extremely prevalent. Hemorrhagic septicemia is not a new disease but a new name for swine plague which prevailed so extensively a decade ago. The cycle of this disease is clearly defined.

Virulence Changes

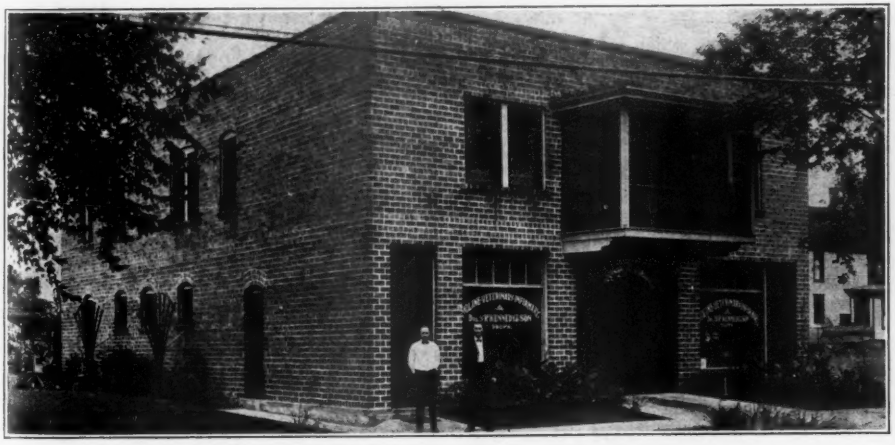
Previous to the discovery of anti-hog cholera serum this disease was widespread and acute in character. Gradually its virulence and incidence waned and only chronic cases were seen, while during the past few years the causative agent has developed enhanced virulence and the disease has become extremely prevalent and acute. The symptoms and lesions of uncomplicated hemorrhagic septicemia in swine are almost identical with those in other species. If this disease is not recognized and is erroneously diagnosed as hog cholera alarming and extremely undesirable results generally follow the administration of the simultaneous treatment.

Hemorrhagic Septicemia and Other Devitalizing Influences Responsible for Breaks

Many so-called breaks subsequent to hog cholera immunization are due to the activities of B.suisepticum, the causative agent of this disease. Autopsies held upon apparently healthy animals in affected areas reveal a startling condition since many such animals are affected with a small localized area of infection. This small area which is glazed in appearance and heavily infiltrated with a serous exudate remains localized until some devitalizing condition results in the liberation of B.suisepticum followed by an acute attack of hemorrhagic septicemia.

The devitalization may be brought about by several conditions such as shipment, exposure to inclement weather, unsanitary surroundings, improper housing or feeding. One of the most common of these, however, is the administration of hog cholera virus in the form of the simultaneous treatment. When any of these devitalizing conditions are superimposed upon this latent infection an acute attack of disease generally follows.

If it were possible for all of us to destroy and autopsy a considerable number of apparently healthy animals and observe this chronic affection of the apical lobe skepticism regarding this disease would rapidly disappear and if after such an autopsy the remainder of the apparently healthy herd could be subjected to the simultaneous method of hog cholera immunization and the results noted there would be fewer who would diagnose the resulting conditions as hog cholera breaks and more who would more accurately diagnose these as hemorrhagic septicemia.



VETERINARY ESTABLISHMENT OF DR. S. R. KENNEDY & SON
3713-3715 Fifth Avenue, Moline, Illinois.

Too frequently post vaccination troubles are diagnosed as cholera merely because autopsy reveals petechiation of various organs. As pointed out septicemia or other conditions as well as cholera while in recently immunized animals petechiation is not abnormal even though the animals remain well. If such cases are carefully investigated the symptoms are generally negative to cholera and lesions which are indicative of other conditions can generally be observed. Not infrequently our diagnosis is incorrect, not for want of lesions but because of our unwillingness to definitely appraise them.

Clinical Picture Differs From That of Cholera

The clinical picture both anti and post mortem of animals affected with hemorrhagic septicemia is sufficiently different from the clinical picture of hog cholera that there seems little justification in most cases for an erroneous diagnosis. Hemorrhagic septicemia is characterized anti-mortem by a rapid onset, fluctuating temperature, by intense coughing and labored breathing, by a unilateral or bilateral nasal discharge, retained appetite, except in the case of marked prostration, and on post mortem by petechiation of various organs and progressive, extensive pathological changes in the lungs.

Hog cholera on the other hand is typified by progressive infection which gradually affects the entire herd, an elevation of temperature which does not fluctuate and by a peculiar breaking or knuckling at the hocks, which is not observed in other diseases, although this ought not to be confused with staggering from intense weakness which may be observed in any disease. In cholera inappetence is generally marked while diarrhoea is fairly constant. Unless there be a secondary pulmonary infection animals affected with this disease show a marked absence of cough, nasal discharge or labored breathing.

Petechiation is the only post mortem lesion which can be attributed to the filterable virus. Lung lesions or intestinal lesions are proof positive of secondary infections.

Petechiation Differs in the Two Diseases

Although petechiation cannot be depended upon for diagnostic purposes there are a few fine points of differentiation which are of significance in septicemias other than hog cholera. In other septicemias petechiation tends to be irregular in size and outline and to vary from pin point size to large splotches. In uncomplicated hog cholera the petechiation consists of small circumscribed areas uniform in size and shape with a tendency to be pronounced and clearly defined in two specific places. These are the crest of the illeocecal valve and the lympathic glands.

In hog cholera the lympathic glands are generally enlarged, quite dark and upon cross section reveal clean cut, isolated, circumscribed petechia, whereas in other diseases caused by bacteria the lymphatic glands tend to become enlarged and engorged with little tendency for circumscribed petechiation.

Necrotic Enteritis

So far as is known at this time this extremely prevalent disease has no specific etiological agent but may result from the activities of several of the bacteria ordinarily present in the intestinal flora. At least two of these B.paratyphosus B. and B.suipestifer are known to be capable of causing this condition but this ability is greatly enhanced after the normal resistance of the host is lowered by any devitalizing condition.

Like other bacteria these organisms develop enhanced virulency and become so pathogenic that at times the disease becomes highly infectious although ordinarily it is sporadic in type.

Since necrotic enteritis is not difficult of diagnosis the important factor connected therewith is the fact that this disease may and does exist as an entity in swine not affected with hog cholera and animals so affected must be handled in a manner entirely different than those affected with hog cholera.

Parasitism Must Be Considered

This condition undoubtedly results from parasitic infestation more frequently than is generally appreciated and for this if for no other reason parasitism in swine deserves our serious consideration. The disease is characterized first by an acute enteritis affecting the intestinal mucosa and associated lymphatic glands.

Following the passive congestion there is a thickening of the entire intestinal tract which at times becomes so intense that the lumen may be almost occluded. Secondary invaders now become active and are responsible for the necrosis which follows.

Concluded in November issue

Anti-Hog Cholera Serum and Virus Dosage

IN THE early days of simultaneous immunization of swine against hog cholera, the dosage of serum and virus used was relatively small. In the usual vaccination of swine, 20 to 25 cc. of serum and one-half to one cc. of virus was considered sufficient to produce the desired results. This dosage was successfully used for some years. After the practitioner had been immunizing swine for some time with good results and the stock men had begun to have considerable faith in the immunization against hog cholera, so-called breaks began to occur and became rather frequent.

The Question of Breaks

Some investigators were of the opinion that the breaks were the result of insufficient serum; others maintained that the dosage of virus used was too small. It was advised that the dosage of serum should be increased. The increased dosage of serum gave the desired results for some time and it appeared as though a method had been perfected by which swine losses could be prevented. In reviewing the history of the immunization of swine against hog cholera, it is evident that for a few years after the introduction of anti-hog cholera serum, the principal disease in shotes and mature swine was hog cholera and that even the small dosage of serum and virus that had been used in immunizing was sufficient to protect in the majority of herds against uncomplicated cholera. During this time hog cholera was considered the only disease of importance in swine and the basis for the diagnosis of hog cholera was the occurrence of any disease in swine that resulted in death.

The so-called break that occurred in herds that had been simultaneously immunized, was probably hog cholera, in only a relatively small percentage of herds, other infections or complications being responsible for the larger portion of these accidents. Soon after the large dose of serum and virus was advised, the so-called breaks again began to occur. The losses of swine after immunization was of such common occurrence in some localities that the use of serum and virus was almost discarded. About this time, more careful investigations revealed the fact that swine were subject to a variety of disorders, among them being diseases or conditions caused by the B. suisepticus, B. suipestifer, and many other microbian agents. It was evident that a more accurate diagnosis of the diseases of swine was necessary if the swine losses were to be diminished. As an outgrowth of the investigations and findings of the so-called hog cholera breaks, it is now known that there are a variety of diseases that may cause severe sickness and even death in swine. This fact is being recognized generally, and practitioners are making a more careful study of the outbreaks in herds of swine before they prescribe or advise treatment.

Dosage Still in Dispute

As to the actual dosage of serum and virus required to protect against hog cholera, there is still some dispute. If a good virulent field virus was used in the production of anti-hog cholera serum and a like virus was used for the simultaneous immunization, then it is probable that the original small dosage of serum and virus would be sufficient to protect swine against hog cholera as it usually occurs in the field. According to the present regulations governing the production of anti-hog cholera serum and virus, it is not possible to use field virus for the hyperimmunization of swine that are to be used for the production of anti-hog cholera serum. It is possible that the virulency of the virus may be varied by its long continued passage through selected pigs in compliance with the regulations and thus the serum produced from such virus may also be less potent; therefore, it seems justifiable to use a larger dose of serum. And, applying the same principle, a larger dose of virus should be used. The best results are obtained by the use of from 3 to 5 cc. doses of virus, rather than 1 to 2 cc., the minimum dose, required. It does not follow that large doses of serum will protect swine against any infection, except hog cholera, neither do we believe that the large dosage will prevent the complications that sometimes follow immunization, but from field reports it is evident that the larger dose of serum and virus diminishes the possibility of the occurrence of hog cholera in swine that have been simultaneously treated with virus.

Bull nose in pigs is usually associated with insanitary pens and lots and can usually be prevented by providing sanitary quarters.

STOCK HOG PROBLEMS

A large number of stock hogs are being shipped in the corn belt for feeding purposes. The successful handling of stock hogs is one of the most important problems of today. Veterinarians are frequently called to advise as to the care of shipped stocker pigs. The greatest losses occurring in this class of swine are usually due to diseases other than cholera and dietary disturbances. If the stock hogs were not stale when purchased at public markets or country points and if properly immunized there will rarely be any loss if a proper ration is provided and weather conditions are favorable.

When to Immunize

Whether or not the pigs should be immunized before shipping to destination, depends upon circumstances. If the pigs are obtained in a community where there is no hog cholera and the length of time necessary for shipment to destination is relatively short, it is possible that immunization at destination would be quite successful. If, however, there is cholera in the community from which the pigs are obtained or two or three days are required in transit to destination, then it would be advisable to have the pigs simultaneously treated before shipping.

Ration a Factor

The ration to provide recently immunized swine, and particularly stocker pigs, is of the greatest importance. Such swine should receive a restricted diet and preferably of ground oats, barley or mill run feed. Disastrous results have been observed in apparently healthy stocker pigs that have been immunized with known potent serum and virulent virus and then permitted to become engorged with corn. It has been demonstrated that the influence of anti-hog cholera serum when used in conjunction with virus can be offset by improper feeding.

The cause of the losses in shipped stock hogs is difficult to determine by the local practitioner because the lesions of hog cholera and other diseases are usually prevalent. The diagnosis in these cases, we believe, should be guarded and in only unusual and outstanding instances can a positive diagnosis of hog cholera be made. In some shipments it is not difficult to recognize hemorrhagic septicemia, or necrotic enteritis as a primary or at least complicating factor.

It is difficult to suggest definite methods of procedure in shipments of stocker pigs in which losses are occurring. It seems advisable to make a careful study of the diet, and see that a restricted diet of proper foods are provided.

Identify and Treat the Complications

When complicating diseases are identified, it is advisable to provide treatment for the same. Some few practitioners have maintained that all losses of stock hogs after shipment are due to the filterable virus and maintain that good results are always obtained by the administration of anti-hog cholera serum in preventing further losses. The facts are that the apparently good results from the use of anti-hog cholera serum are due to the proteids of the serum and not to anti-bodies that would neutralize a filterable virus. Practically the same results would have been obtained by the use of normal blood serum. If there are indications of hemorrhagic septicemia in "shipped in" stocker hogs, then, we would suggest the use of herorrhagic septicemia or swine plague bacterin.

If there are intestinal disorders and particularly of the nature of necrotic enteritis, mixed bacterin in repeated doses in conjunction with intestinal antiseptics and a ration containing sour milk or lactic acid will be of considerable value.

UNUSUAL HOG-CHOLERA "BREAK"

History: About 180 four to five week old pigs were treated with anti-hog cholera serum and virus in May. The pigs were thrifty and apparently healthy when they were treated and there was no evidence of disease until about the middle of August. These pigs had the usual care and the surroundings were good excepting for the presence of a pond to which the pigs had free access. These pigs were run on pasture and recently they have been given a ration of corn and tankage and, generally speaking, have been making satisfactory gains. Two or three were noted to be off-feed about the middle of August, and from that time until September 10th, eight died.

Symptoms: Inappetence was the first evidence of disease. The affected pigs appeared gaunt but were rather active and did not have a tendency to lie in their beds. A bronchial cough was a common symptom of all affected pigs. The temperature was variable, but a high temperature was noted in only one affected gilt. Some affected pigs were isolated and made a complete recovery although they

became quite thin and noticeably emaciated. Most of the affected pigs lingered for from four to six days and then died.

Autopsy Findings: The one pig that had a high temperature (108°F) was destroyed and evidenced the lesions usually associated with hog cholera, viz.,—tumefied, congested and hemorrhagic lymph glands, petechial hemorrhages in the lung, bladder and kidneys. The lesions of other pigs that were autopsied consisted of a general icterus, enlarged spleen and an excessive quantity of a sero-gelatinous exudate in the serous cavities. There were some lesions due to the strongylus paradoxus and practically all of the shotes autopsied were infested with the intestinal round worms (ascarids).

Will some of our readers suggest a diagnosis and recommend treatment for the above herd of swine?—K. T. A., Mo.

SWINE SHOULD BE SORTED

Breeding, raising and feeding of swine is profitable when properly managed. Proper classification is one phase of swine management that is not given proper consideration by the majority of producers. It is the rule rather than the exception to find fattening hogs, shotes, breeding sows, and suckling pigs all in one lot. To obtain the best results and the greatest financial returns it is necessary to provide separate lots for swine of different sizes. Suckling pigs can not be expected to thrive and do well when there is a mixture of large fattening hogs and growing shotes in the same lot and particularly when they are all given the same ration.

Successful Breeders Classify and Re-classify

On the best regulated breeding and feeding farms the pigs are classified as soon as they are weaned, separating those desired for breeding purposes from those to be used for feeding. Some feeders prefer to even re-classify their feeding lots, claiming that they have found it profitable to market pigs that are all practically the same size and color. The feeding of the different classes of pigs will be essentially different.

The fattening hogs should be given a fattening ration, whereas, the breeding hogs should be given a growing ration. It is always advisable to properly identify pure-bred pigs that are to be kept for breeding. Different tags are available for this purpose, the choice of which will depend entirely on the breeder.

The practicing veterinarian should consider himself a missionary to spread the gospel of better swine management.

WHY PIGS COUGH

Cough is a sudden expiration following a full, deep inspiration and is a common symptom occurring in a variety of respiratory disorders. Coughing may be induced by the inhalation of foreign bodies, smoke, dust, cold air, parasites, etc. A short, hacking cough usually indicates a disturbance of the pharynx. Repeated coughing evidences laryngeal irritation. A moist, deep cough is significant of disturbances of the bronchial tubes. A series of expulsive respiratory efforts or spasms of coughing, associated with a wheezing respiration, are indicative of parasitic pneumonia. A thorough clinical examination of the lung of swine is not practical, excepting to a limited extent in bacon hogs.

One of the most common causes of coughing in swine this season of the year, is inhalation of dust. This is particularly a fact in shotes weighing from 80 to 100 lbs. Excessive coughing in pigs ranging from one to three weeks of age during the fall season is most frequently the result of irritation caused by larval ascarids. A variety of microbian agencies are capable of producing sufficient irritation of the bronchial tubes to result in more or less disturbances evidenced by coughing. Excessive coughing is an outstanding symptim of "Flu."

Many inquiries are received asking for the treatment of swine in which the principal symptom enumerated is cough. It is extremely difficult to prescribe in such cases without some definite knowledge as to the cause of the disturbance.

Generally speaking, we would suggest that wherever it is possible pigs be maintained on pasture, in order to avoid dusty beds and lots. If it is not possible to keep the lots and beds free from dust, the frequent sprinkling with some mild antiseptic has been found of value in diminishing the occurrence of respiratory troubles in swine so maintained.

Prevention of cough due to the presence of larval ascarids in the lung depends upon the elimination of the ascarids from the sow prior to farrowing and the placing of such animals in clean quarters that have not been previously occupied by swine.

Pulmonary strongylosis, a condition usually manifested by a deep, moist cough and a

wheezing respiration, is rather difficult to overcome, because the parasites are usually located in the smaller bronchioles and are protected by mucus and inflammatory products. It has been demonstrated that inhalation medication of medicaments that will facilitate the elimination of the abnormal content of the bronchioles is of value. It is necessary to observe sanitary precautions in conjunction with treatment.

CONVULSIONS IN YOUNG PIGS

Will you give me some information relative to the following case? The subject is a two year old, 500 pound, pure-bred big bone Poland China sow. This sow was purchased as a bred sow by the present owner in December, 1921. She farrowed eleven pigs in March, 1922. These pigs were all apparently normal excepting three which were deformed and were dead at the time of farrowing. The other eight pigs suckled and appeared to be doing nicely until the second day after farrowing when they had convulsions. The convulsive fits occurred while suckling or immediately thereafter and six of the affected pigs died promptly. Two of the pigs were sick for several days and ultimately recovered and by careful feeding these two pigs have made a good growth.

The sow was bred on April 12th, and she was kept in a woods pasture in which there was ample good spring water, good grass and there was a patch of oats, wheat and rye to which she had free access. Once or twice weekly she was given a feed of dry corn or oats. Ten days before farrowing, this sow was placed in a rather large lot where there was an abundance of grass and she was fed a bran slop and oats, and given clean water to drink. She farrowed eleven pigs on August 5th. These pigs were all apparently normal at the time of farrowing but they all developed convulsions and died the second day after farrowing.

Three other brood sows have been kept under the same conditions and fed in the same way but there has been no loss of pigs in their litters.

What is the cause of this trouble? How can it be prevented? Should this sow be kept for breeding purposes? Any information that you can give will be appreciated.—J. A. D., S. C.

Reply: Your very interesting letter describing the unusual loss of pigs from one particular sow is received.

The fact that this sow farrowed deformed pigs in March would indicate that the sow's genital organs are diseased, or at least there had been some rather marked disturbance during the period of pregnancy. Many of the slightly deformed animals are, no doubt, due to placental infections that are not sufficiently active to destroy the fetus and result in abortion. Frequently in such cases the remaining young within the uterus will be infected and although they may appear normal at the time of birth, their vitality and vigor are not sufficient and they can not withstand any external injurious influences and soon die. It would seem that the feed was not a factor as there were no losses in the litters of three other sows kept in the same pasture and fed in the same way. However, the fact should be kept in mind that some animals have a depraved appetite during the period of pregnancy and this particular sow may have eaten quantities of some weed or plant that is not ordinarily consumed by swine and poisonous products may have been eliminated in the milk and thus poisoned the pigs.

It may be that this particular sow produces an excessive quantity of milk. One of the most common causes of the loss of little pigs is an over-supply of milk, particularly for the first week or ten days after farrowing.

In conclusion and summarizing the above, it would seem that the loss of pigs from the particular sow in question were due to either some diseased condition within the sow which in turn may be due to faulty breeding, or there is some disturbance in the food; the milk from the sow either containing injurious products or being excessive in quantity.

It is probably possible to prevent a recurrence of such conditions. It would be advisable to closely observe the sow and determine whether or not she eats any unusual plant or weeds and if she does she should be placed in a dry lot and fed a proper ration. It is further suggested that about ten days before farrowing time that this sow be given a restricted ration of not more than one-third or one-half of the usual amount necessary to maintain her. This limited ration should be continued for about ten days after farrowing. It would also be advisable to see that there are no errors in breeding.

Dysentery and fatal diarrhea in pigs are usually due to dietary disturbances, induced by improper diet of the sow.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

Spurious Parasites in the Feces of Animals

A SPURIOUS parasite may be defined as anything which is not a true parasite, at least in the host in which it is found, but which has been regarded as a parasite in that host or which may be mistaken for a parasite of that host.

Some of these spurious parasites are true parasites of hosts other than the one in which they are found; thus Oxyuris compar, reported by Leidy from the small intestine of the cat, is probably O. ambigua from the large intestine of the rabbit, the cat having eaten the rabbit intestine a short time before the death

Fig. 1. Dark fibre cells of banana, showing arrangement resembling tapeworm strobila. Enlarged. From Stiles and Hassall, 1902.

of the cat and of the finding of the worm in the small intestine postmortem.

A second group of spurious parasites is composed of non-parasitic animals which have been eaten and subsequently found in the digestive tract or feces of the animal which ate them; thus various insect larvae have often been regarded as parasitic, though many such cases deal with insects incapable of such

Fig. 2. Seed of Indian mustard, *Brassica juncea*. Enlarged. From Beal, 1910.

parasitism and often found to be dead and partly digested when carefully examined.

A third group of spurious parasites consists of portions of the host structure, such as ciliated tracheal cells which have been regarded as causative organisms in whooping cough, or lymphatic glands and pacchionian bodies which have been regarded as hydatids.

A fourth group of spurious parasites, and one of especial interest in connection with

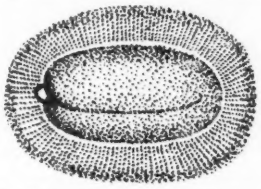


Fig. 3. Seed of shepherd's purse, *Bursa bursa-pastoris*. Enlarged. From Beal, 1910.

spurious parasites in feces, is composed of plant and animal material which may be mistaken for parasites and parasite eggs. Plant material is especially liable to be mistaken for parasites owing to its greater content of indigestible substances as compared with animal material. Aside from bones, which are usually readily recognizable, there is comparatively little in the way of animal material which passes the digestive tract undigested, but the high content of cellulose and related substances in plants furnishes an abundance of undigested materials which may simulate parasites, and numerous seeds and spores simulate parasite eggs.

Fig. 4. Seed of daisy fleabane, *Erigeron ramosus*. Enlarged. From Beal, 1910.

Fig. 5. Seed of bird's foot trefoil, *Lotus corniculatus*. Enlarged. From Beal, 1910.

Among the objects commonly present in feces and frequently mistaken for parasites are plant hairs. These are usually mistaken for nematodes of some sort, the hair being somewhat pointed at its free end and sometimes having a structure slightly suggestive of a strongyle bursa at the end originally at-

tached. The writer has known these hairs to be mistaken for nematodes by a man of several years experience in the field of parasitology, and has called attention to one case in which such a plant hair was reported as a trichina larva in the blood. The homogeneous structure of these hairs and the lack of any internal structures resembling those in nematodes should be sufficient to distinguish them from worms. Fibrous connective tissue

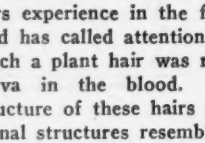


Fig. 6. Pollen-spore of a pine, *Pinus insignis*. Enlarged. From Campbell, 1902.

Fig. 7. Cell of yeast fungus, *Saccharomyces cerevisiae*, containing 4 spores. Enlarged. From Campbell, 1902, after Reess.

may sometimes be mistaken for nematodes. but here also the lack of any internal organization resembling that of nematodes enables one to differentiate these structures. Numerous structures belonging to the fibro-vascular bundles of plants may simulate nematodes. but the presence of a spiral marking throughout or of regularly pitted markings along a cylindrical structure is suggestive of plant material. In case of doubt, always examine the object for the internal structure which should be present if it is a nematode.

Various substances simulate tapeworm seg-

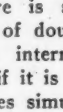


Fig. 8. Ripe spores of corn smut, *Ustilago maydis*. x 600. From Campbell, 1902.

Fig. 9. Two views of the diatom *Pinnularia viridis*. Enlarged. From Campbell, 1902.

ments. One which was reported years ago by Stiles and subsequently by various writers, and which the writer has seen on several occasions, consists of banana fibres (Fig. 1), which may have an arrangement very similar to a small tapeworm. Blanchard has noted a case in which a piece of peach skin was determined as a fragment of hydatid cyst.

Of the things which may resemble flukes

Fig. 10. A diatom, *Navicula* sp. x 500. From Campbell, 1902.

the pulp vesicles of the lemon and orange deserve mention. Pulp vesicles of the lemon are commonly present in lemonade and may pass intact in the feces of persons who have recently drank lemonade. The superficial resemblance of these vesicles to flukes has been mentioned by a number of writers, including Leuckart, Stiles and Ransom, in connection with cases of mistakes in identification of parasites. The lack of any internal structure

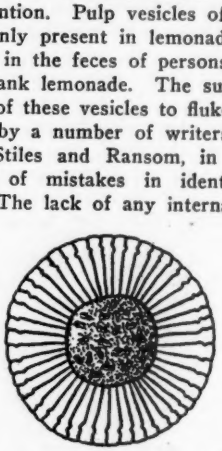


Fig. 11. A pelagic diatom, *Planktoniella sol*, viewed from above. x 125. From Campbell, 1902, after Schuett. This is actually disk-shaped.

in any way resembling that of a fluke should be sufficient to prevent one from mistaking pulp vesicles for flukes. Careful washing to remove fecal matter, mucus, etc., is a great aid in determining the true nature of supposed parasites. As a matter of fact, such mistakes in identification are usually made as a result of total unfamiliarity with parasites or as a result of snap judgment.

The spurious parasites which are of most practical importance are the numerous objects, mostly plant material, which occur in feces and which resemble parasite eggs. To differentiate such material several tests may be applied. Such spurious parasites are frequently very different in size from the eggs which they resemble, and an accurate measurement will often show that they are not the eggs they are supposed to be. Plant material as a rule is more dense, more often colored, and shows less cell structure internally than do parasite eggs. Cestode eggs may be definitely determined by the presence of the 6 hooks

of the onchosphere. Fluke eggs usually show an operculum or lid at one end. Nematode eggs are very variable in size and shape, but they usually contain an embryo or else cells in process of division, and the shell is definitely delimited from the egg content to an extent which is not true of the external coat and the content of a plant spore. In a general way it is true here as elsewhere that other things may look like the thing you are in search of, but the thing itself is unmistakable when you find it. A parasite egg is evidently a parasite egg; it doesn't merely look like a parasite egg. Doubtful eggs are usually to be regarded as not eggs. As a final test of the matter one may sometimes use chemical reagents to differentiate plant material from animal material. The addition of tincture of iodin to a slide will color starches blue. By adding sulphuric acid and iodin cellulose substances will be colored violet or black, and nematode eggs will be colored black with a

Fig. 12. A division stage in a gonidium of one of the green algae, *Pleodorina californica*. Enlarged. From Campbell, 1902, after Shaw.

light areole where the shell shows at the periphery. Various stains have been used to stain plant material and leave worm eggs standing out against a stained background. Among these stains are magenta, used by Giles, methyl green, used by Looss, Orange-G, used by Taylor, and gentian violet, used by Fauntleroy and Hayden. It is rarely necessary to resort to such elaborate technic to determine whether material is parasitic if one has been properly instructed in the subject of making fecal examinations, but when one must learn the art unaided, such devices are sometimes of value.

There should be little occasion to confuse the seeds of the higher plants with parasite eggs, as the seeds are usually much larger and are densely opaque. A distinctive structure of seeds is the micropyle, the aperture at which the young plant starts to grow from the seed. However, such confusion does arise and the Veterinary Record for October 3, 1914, reports a case in which small brownish objects in the feces of a patient were regarded as parasite eggs and subsequently found to be vanilla seeds, the patient being accustomed to drinking a certain brand of cocoa which was found to contain such seeds. Strawberry seeds are frequently mistaken for parasitic material. As illustrations of the superficial resemblance between seeds and parasite eggs, there are figured here the seeds of Indian mustard (Fig. 2), superficially resembling an ascarid egg of some sort; the seed of shepherd's purse (Fig. 3), which if cleared to show this structure might resemble an echinorhynch egg or a nematode egg; the seed of the daisy fleabane (Fig. 4), which in outline

Fig. 13. A unicellular plant, *Chlorococcum* sp., the one on the right showing division. x ca. 1000. From Campbell, 1902.

is very similar to a whipworm egg; and the seed of the bird's foot trefoil (Fig. 5), to show the micropyle characteristic of seeds.

A related body which is often found in feces in the spring is the pollen-spore of the pines, this pollen being distributed in clouds on a windy day and occurring over wide areas about pines. The pollen-spore (Fig. 6), has a 3-part structure, consisting of a central body and 2 wings, and is practically unmistakable.

Fig. 14. One of the Schizophyceae, or blue-green algae, *Chroōcoccus turgidus*, showing 4 cells surrounded by a gelatinous envelope. x 500. From Campbell, 1902.

Various fungi produce cells or spores which call for some consideration as to identity the first time one sees them in feces. As illustrations there are figured here a cell of the yeast fungus (Fig. 7) and some ripe spores of the corn-smut (Fig. 8).

Unicellular plants, belonging to the large group of algae, are frequently found in feces owing to their occurrence in water supplies of domestic animals. Some of these are figured here. Two of the diatoms figured (Figs. 9 and 10) have somewhat the outline of whipworm eggs, but have a quite different internal organization and have the distinct and delicate striation which is characteristic of the diatoms; the other diatom (Fig 11) has a slight resemblance to the well known figures of the

Now turn to page 668

EARNED THE PRICE OF SEVERAL TRACTORS

This pair of mules are owned by Mr. W. S. McFadden, formerly of Kansas City. He worked them twenty-eight years and says they are good for ten years more. He drove them from Kansas City to California and will match them against anything of their weight in a pulling contest regardless of age. Dr. E. E. Poupart vouches for the authenticity of the story.

CATHETER LEFT IN THE BLADDER OF A GELDING.

The above illustration is of a catheter and accumulated calcareous encrustations removed from the bladder of a gelding by Dr. K. J. McKenzie, Northfield, Minn., exhibited at the clinic of the Short Course for Veterinarians given at the University of Minnesota, in July.

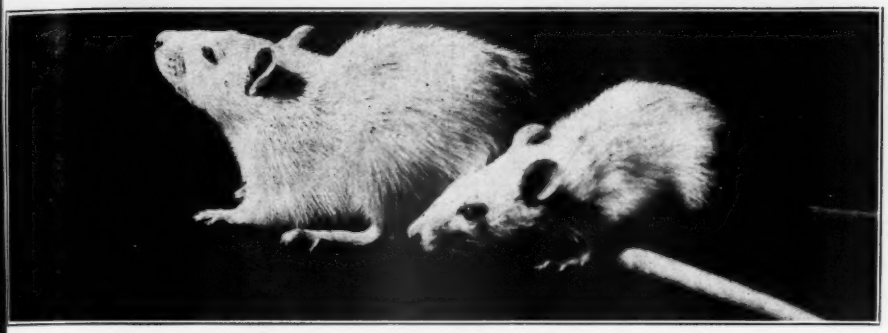
The patient in question was a gelding that had been cathetrized by an empiric during an attack of azoturia. According to the history obtained from the owner, the empiric while attempting to withdraw the urine became excited but without announcing that the instrument had slipped out of his reach returned to town for another one to complete the operation. With the new catheter the hidden one was evidently driven into the bladder in the futile effort to accomplish the purpose of evacuating it. No urine was withdrawn, and the "doctor" left the scene after giving an unfavorable prognosis.

The horse did not die, however, but instead, made a good recovery and suffered no inconvenience for a period of six months when symptoms of distressed urination began to appear. For this new trouble Dr. M. R. Higbee was called. He diagnosed the case as cystic lithiasis and recommended the operation that disclosed the facts of the case.

Zootechnics

Edited by E. MERILLAT, M. D. V.

RATS DEMONSTRATE VALUE OF MILK AS FOOD



The Department of Agriculture has on exhibition milk fed rats and others to show the difference this vital food makes in the growth of animals. In the accompanying photograph, the bigger fellow is milk-fed, and the other one is not.

—The Gilliam Service.

ITAMINS ARE FOUND ESSENTIAL TO GROWTH

Pigs, calves, chickens and for that matter ys and girls, may have a balanced ration and t fail to grow, said C. H. Hunt, nutrition emist, who has scores of small animals on eding tests at the Ohio Agricultural Experi- ent Station to determine the vitamin con- nt of various articles of food. Stunted owth, several diseases, and even death, he ds, may be due to a lack of one or more of e vitamins.

Vitamins are found in the natural foods, ch as milk, meat, vegetables, etc. Polished e, and other cereals from which the hulls are moved in the course of their preparation for od, potatoes, oleomargarine, and the like, e deficient in these essentials to growth. A enu of white bread, potatoes, rice and but- ine will not produce growth. If butter be pplied instead of its substitute, and meat, lk, vegetables and fruit be added, though more be eaten, the effect on health and owth will be immediate and great.

If a variety of plain food is provided there ed be no fear of a deficiency of vitamin. It only when the diet is restricted to a few icles that ill may result.

GLASS STOMACH INDICATES DIGESTIBILITY OF FOODS

It is now possible to determine the digestibility of the protein in foods and whether or not it is necessary to cook them, without conducting feeding tests, thus saving much time and expense, say the specialists of the bureau of chemistry, United States department of agriculture, who have adapted a chemical method to this work. The method is carried out by the use of laboratory apparatus that might be called an artificial stomach, since by its use it is possible to imitate at least a part of the digestive processes.

Tested with HCL and Pepsin

The proteins to be tested, those from beans, for instance, are placed in glass containers in a dilute solution of hydrochloric acid similar to that found normally in the stomach, the proper quantity of pepsin is added, and the mixture is placed in an incubator where the temperature is kept at the same point as that of the human stomach, about 37 degrees centigrade. After a certain number of hours the contents of the container are sampled and analyzed. The digestive effect is measured by the ratio of what is known as amino nitrogen

to total nitrogen. By running through cooked and uncooked protein from beans it is possible to determine which is the more easily acted upon by the chemicals in this artificial stomach, and, consequently, by the stomach itself.

Then with Trypsin

After the feed has been acted upon by the pepsin and hydrochloric acid, it is treated with trypsin and a dilute alkaline solution, as nearly as possible like the digestive juices found in the small intestine. This second process tells the investigator what the probable digestive action on any particular food will be in the intestine.

Test Indicates Relative Digestibility

In the human or animal body there are, of course, other factors that enter into the digestion of food or feeds, but the "artificial stomach" will tell if one protein is more digestible than another and whether it is more digestible when cooked or raw. It does not tell what kinds of protein are contained in a food or whether the variety is sufficient for all the needs of the body.

BOVINE TUBERCULOSIS ERADICATION

Less than 10 years ago, says the United States department of agriculture, the eradication of bovine tuberculosis seemed a staggering undertaking. One reason that rapid progress seemed impossible was that the subcutaneous-test method ordinarily used was slow. But since that time the use of other methods that are much more rapid, the ophthalmic and the intradermic, have made it possible to clean up areas as large as counties in a few weeks with a relatively small force. The only possible way to eradicate tuberculosis in the light of our present knowledge is to find the diseased animals and properly dispose of them more rapidly than the disease can be spread; that is the big problem, and it means testing great numbers of animals.

NEW MAP SHOWS EXTENT OF CATTLE TUBERCULOSIS IN U. S.

Tests of thousands of herds throughout the country have enabled the United States department of agriculture to make a map showing the approximate percentage of cattle in various States and counties infected with tuberculosis.

In nearly half the country, largely in the South and Southwest, it is shown that less than 1 per cent of the cattle have the disease.

In other parts of the country the infection runs from 1 to 15 per cent, and in still other localities, aggregating more than 50,000 square miles, more than 25 per cent are believed to be tuberculous.

The figures are based on five years of systematic testing, and should prove of value in directing eradication work.

AREA PLAN OF TUBERCULOSIS ERADICATION INCREASES

The plan for eradicating tuberculosis in cattle from entire areas, such as counties, is daily growing in popularity according to reports coming to the United States department of agriculture. The idea has taken hold in Michigan and is spreading rapidly. Already five counties have been freed of the plague, and reports from the inspector in charge for the government show that the boards of supervisors have appropriated money and made provision for co-operating with state and federal forces. When one country joins the ranks for eradication its action stimulates others to follow. The prospect for ultimately ridding the country of the disease never looked so promising as at present, say those in charge.

Dairymen in the 45 cow-testing associations in the 9 western states now own 9,484 cows that have made more than 40 pounds of butterfat in a month. Not many years ago a 40-pound cow was a rarity. There is much room for improvement, however, in the general run of herds in all parts of the country, says the United States department of agriculture.

BADLY TUBERCULOUS AREAS MAY BE FREED FROM DISEASE

In the region that includes the New England States, New York, Pennsylvania, and New Jersey, there is extensive interest in the eradication of bovine tuberculosis. At the Eastern States conference on the subject, recently held, much information of value to dairymen and cattle breeders was presented by state and federal sanitary officials. Their estimates, based upon the results of actual tests of a large number of herds, show that in some parts of this area nearly 30 per cent of the dairy cattle have the disease. It seems to be most prevalent in the thickly populated states of Connecticut, Massachusetts, and Rhode Island, but infection is extensive in New York, New Hampshire, and Vermont. Pennsylvania and New Jersey herds have about 9 per cent of diseased cattle, while Maine has only 2.7 per cent.

To these states, as well as many others, tuberculosis is a serious economic problem, but since the disease makes herds unprofitable or greatly reduces their efficiency, it pays to get rid of it. Keeping up a herd of diseased cows is just as hopeless as it is to maintain a factory or other business at a loss from year to year. Many a dairyman in this area has been financially ruined without knowing the real cause.

Since the plan for getting rid of the disease in definite areas has been carried out with such success in so many counties, there is reason to believe that even in the badly infected localities it is possible to eradicate the plague and keep it out.

BETTER-SIRES ENROLLMENT PASSES THE 8,000 MARK

With the growing understanding of the utility value of pure-bred live stock and especially pure-bred sires, the list of persons enrolled in the "Better Sires—Better Stock" campaign is rapidly increasing. The middle of August it passed the 8,000 mark, signifying that many persons have filed statements with the United States department of agriculture that their live-stock breeding operations will be conducted henceforth on a pure-bred-sire basis. This includes all classes of domestic live stock, including poultry.

In some counties of limited area the number of farms is relatively small. Gordon B. Nance, county agent of Oldham county, Ky., points out, however, that although his county has only 1,086 farms, 10 per cent of the farmers have signed enrollment blanks, which signifies active participation in systematic live stock improvement work. Other counties in which 10 per cent or more of the farmers are using pure-bred sires exclusively are: Pulaski county, Va., 52 per cent; Kittitas county, Wash., 18 per cent; Greene county, Ohio, 13 per cent; and Orange county, Va., 10 per cent. In this connection the United States bureau of animal industry points out that the proportions are for all farms and that the percentages for farms in which live stock is the principal market product probably would be much higher.

MORE PIGS RAISED BY SOWS PUT ON BALANCED RATION

Sows put on balanced rations raised 71 per cent more pigs than those receiving the same management but fed on low protein rations in a "Save the Pig" campaign carried on by extension workers in Kansas last spring. Farrowing records were kept by 53 farmers. According to a report received by the United States department of agriculture, 263 sows on 29 farms received corn and a protein supplement of either tankage, skim milk, alfalfa, or linseed-oil meal. These 263 sows farrowed 2,669 pigs, an average of 10 to a litter; of these pigs, 1,713 were weaned, an average of 6.5 pigs per litter. On 11 farms, 166 sows received mostly corn rations, farrowing 1,194 pigs, an average of 7 to the litter; of these pigs, 1,645 were weaned, an average of 3.8 pigs to a litter.

CATTLE-DIPPING RECORD AGAIN BROKEN IN TEXAS

Texas broke its own cattle-dipping record when in July 6,783,503 dippings in that state were recorded by the bureau of animal industry, of the United States department of agriculture. The figure is more than 150,000 greater than the dippings for June, which, as recently announced, broke all records for progressive tick eradication since the work began in 1906.

There are nearly 10,000 vats in operation, of which more than 200 were built during July. The rapid progress being made in eradicating ticks is the result of thorough preparation and the excellent spirit of co-operation among the state and county officials, cattle owners, and representatives of the United States department of agriculture.

FOXES HEAD LIST OF PUREBRED ANIMALS IMPORTED LAST YEAR

In the list of importations of purebred animals for which the United States department of agriculture issued certificates of pure breeding during the last fiscal year foxes stood at the top in numbers, dairy cattle were next, with dogs a close third. Beef cattle, horses, and sheep, formerly imported in large numbers, were almost in the same class with cats. Very few horses have been brought in during recent years, and the number of beef cattle and sheep has decreased partly on account of foot-and-mouth disease, which existed in England a part of the year. However, since the war fewer farm animals of all kinds have been coming into this country.

The total number of all kinds brought in during the year was 2,639. There were 967 foxes, all from Canada; 761 dairy cattle, mostly from the Channel Islands and Canada; 591 dogs, a large part of them from England, Germany, and Canada; 151 horses; 87 beef cattle; 62 sheep and 20 cats.

SEEING IS BELIEVING—TUBERCULOSIS

One of the most encouraging features of the campaign against bovine tuberculosis that is now being pushed in Nebraska is the fact that farm and county officials who are frankly skeptical on the subject are visiting the market every few days to see the final disposition of the cattle condemned in their communities.

Some Saunders county men here this week to keep tab on a bunch of "reactors" from their farms were given an object lesson that convinced them thoroughly that the war on tuberculosis is not only desirable but that it is absolutely necessary in the interest of economy as well as in the interest of the public health.

When stock growers, standing on the killing floor of the packing house, see with their own eyes the diseased organs of cattle taken from their own farms; when they are shown by officials of the Bureau of Animal Industry that apparently healthy cows are so badly diseased that their carcasses must be tanked, these men realize the loss that tuberculosis is to them as well as the menace it is to the country.

The work of cleaning up the herds of the state is progressing steadily, not perhaps as fast as it should, but satisfactorily in view of the great lack of information on the subject and the need for popular education along this line. It will progress still more rapidly if more of the county officials and stockmen affected will take the trouble to follow the condemned or suspected cattle to market and witness for themselves what disposition is made of them.

No more important work is done by the Omaha Live Stock Exchange than the activity in tuberculosis eradication under the direction of Dr. Spencer and with the intelligent cooperation of the stockmen of the state there is every reason to hope and believe that this work will finally result in the practical elimination of this great scourge from the herds of Nebraska.

—Omaha Drover's Journal.

YOUNG CARIBOU BULLS MAY IMPROVE REINDEER HERDS

The possibility of improving the grade and weight of the reindeer in Alaskan herds by crossing them with caribou is being considered by the biological survey, United States department of agriculture. A reconnaissance has been made in Mount McKinley National Park to determine the best locality for capturing later in the season a supply of young caribou bulls to be used in the breeding experiments.

The average dressed weight of several thousand reindeer carcasses shipped from Alaska was about 150 pounds each. In certain parts of Alaska, including Mount McKinley National Park, there is a form of native caribou the bulls of which are reported to attain maximum dressed weights approximating 400 pounds, and it is claimed that some are even heavier. Relationship is very close between our native caribou and the Alaskan reindeer, which are descended from stock imported from Siberia. It is believed, therefore, that crossing the two will result in greatly improving the grade of the reindeer, perhaps doubling their weight.

Our biggest and most profitable enterprise is that of helping to make agriculture a paying industry.

There are 216 fox farms in the United States, on which there is being raised over five thousand silver foxes for breeding purposes and for fur. The foxes on these farms have an estimated value of over four million dollars.

Canine, Feline and Avian Practice

Small Animal Practice*

By Dr. O. V. Brumley, Columbus, Ohio
Professor of Small Animal Practice, Ohio State University

Concluded from September issue

DISTEMPER—(Cont'd.)

4. The nose becomes dry and hot. The nasal discharge is at first serous but later thicker and muco-purulent in character. Sneezing and sniffling due to the rhinitis is a very prominent symptom. The discharge accumulates around the nasal openings in the form of crusts. The infection travels down the respiratory passages either to produce laryngitis, bronchitis or as happens in many cases a bronchopneumonia.

5. Various nervous phenomena accompany most cases of distemper. Dulness and depression is shown at the beginning of the disease, and it may be all that the animal will show. However, in a great many cases, the nervous symptoms develop early in the course of the disease and are manifested by excitement, restlessness, yelping, cries, even simulating symptoms of furious rabies. Spasms, twitching of muscles in various parts of the body are frequent. The opposite condition of paralysis is very common, especially, as a sequel to the primary condition.

6. A pustular exanthema of the skin is found in a large number of cases. Small, red spots appear along the abdomen on the inner surface of the thighs, around the eyes and on the internal surface of the external ear. These spots in a day or so are transformed into small pustules. They rupture, leaving small, ragged surfaces, and covered with a scab.

7. The initial high temperature is usually followed by a remittent or subnormal temperature.

The temperature is not always a good indication of the actual condition of the patient. The animal becomes emaciated, weak, the action of the heart disturbed as the disease progresses. The membranes become pale and the animal shows marked evidence of the severe infection.

It is important to understand that many cases of distemper develop irregularly. This fact makes it difficult in many cases to arrive at a positive diagnosis. We have seen many cases where it was impossible to make a correct diagnosis during the early stages of the disease.

Prognosis

This is not favorable even in the milder forms of the disease. We have found it very difficult to give the owner a satisfactory prognosis. It is well to guard the prognosis in all cases.

Treatment

It is very essential in distemper to supply the patient with easily digested, nourishing food. Perhaps the best food is raw meat chopped fine, or scraped into a pulp. Patients will be tempted by this food when they will not eat anything else. In cases where the appetite is lost and in order to maintain the animal's strength, beef broth is most excellent. This may be given with warm milk, or milk with egg beaten up in it. Other foodstuffs may be given, depending upon the progress of the case, and the needs of the patient. In the digestive form of the disease only small amounts of liquid food should be given via mouth. Rectal feeding with warm milk and meat broth is recommended in these cases. I find diet very important in all cases of distemper.

The animals must be well protected from exposure to extremes in temperature, or cold draughts of air. They should be placed in a clean, moderately warm, well ventilated room. The bedding should be kept clean at all times. Supply fresh water at frequent intervals. Nursing plays an important part also in treating this disease.

If it can be done I think many cases of distemper will make better progress at home. However, it often happens the owner is in no position to give them sufficient care and atten-

*Address delivered at the Short Course for Veterinarians given by the University of Minnesota, July, 1922.

tion and in this case it is necessary to take them in the hospital. There is a wide divergence of views on this subject and treatment must be carried out according to the conditions in the individual case.

Owing to the many forms of the disease and its complications, treatment must be essentially symptomatic. However, there are certain fundamentals we think should be applied in all cases.

Serum Treatment: We have been using serum with some degree of success. It is administered in 20-30 c. c. doses every 18-24 hours The dose should be reduced as the animal shows improvement. I do not wish to start a discussion relative to the merits or demerits of serum in these cases. But after using it quite extensively over a period of two years, treating possibly 2,000 to 2,500 cases, we feel safe in saying it reduces the mortality considerably.

Medical Treatment: A combination made up of iodine 1/25 grain, Creosote ¼ grain and potassium dichromate 1/20 grain has been used with considerable success as it is a powerful antiseptic for the respiratory and digestive tracts. This is given ½ to 3 tablets at a dose depending on the age and size of the dog. Repeat dose every 6 to 10 hours. Stimulants, such as minute doses of strychnine sulphate will be found useful to maintain the general processes in the body. Many preparations could be mentioned which have been used for this disease. No doubt but what many of you have been using certain preparations with some degree of success. We believe, however, if we keep in mind thse fundamentals and then apply symptomatic treatment when it is needed, the mortality rate can be diminished considerably. We have had quite a number of preparations presented to us for trial which carried the claim of being specifics. So far we have found none that deserves such distinction.

Immunization Seems Possible

We should, I believe, encourage the immunization of young dogs. I do not claim that complete immunity can be established in all cases but we have found that many young animals can be immunized and in others the severity of the case can be reduced. For a short period of immunity, when it is necessary and more convenient, we have been administering three doses of the serum, using 20-30 c. c, 48-72 hours apart.

We believe for general prophylaxis it is more satisfactory to use the bacterin given in at least three doses, three to five days apart.

The immunization should be encouraged especially in dogs that are exhibited at the various shows.

In conclusion wish to say that distemper is a formidable disease and will tax the ingenuity of the veterinarian to protect the patients and give efficient and satisfactory service at all times.

Considerable tact is necessary in handling irregular cases and conditions as they present themselves.

Just a Word on Parasites

One more brief statement and then I will have finished. Practically all dogs from puppyhood to maturity are infested at some time with parasites. This statement is especially true in regard to internal parasites. We should make an examination of all dogs as a routine measure to determine the presence or absence of parasites and if present determine the species. This is easily accomplished by a mocroscopical examination of a small amount of fecal material. We find that it is impossible to successfully eradicate the parasites without knowing the species present.

The treatment applied will depend upon the kind of parasites present. In this connection, I wish to report that carbon tetrachlorid has given us excellent results in removing hook worms from dogs. Its use has demonstrated its superiority over any of the other anthelmintics used to date. It has several things to recommend it. 1st. Can be given in quite large doses without any danger of toxic effect. 2nd. It has proven to be more efficient than any of the other drugs used. 3rd. It is inexpensive. Hook worm disease is quite serious in our small patients and when found by microscopical examination prompt measures should be taken to combat it.

Similar statements can be made relative to skin diseases. We do not believe it possible to diagnose these diseases without the aid of the microscope. There are so many variations in the skin lesions in even a single form of mange that one cannot determine the condition definitely by microscopic examination.

I would recommend especially a careful examination microscopically in order to make a positive diagnosis in any form of parasites in our small patients. Some might say it is not a practical proposition but we do not think it can be done in any other way to obtain maximum efficiency with our treatment.

WORMS, PSEUDO-RABIES, DISTEMPER CONVULSIONS, DEATH

A large collie, ten months old in good condition began to show signs of nervousness by running and howling. He was very much excited and barked with a slightly changed intonation. Each attack was followed by a state of exhaustion. He would run up and down the stairs, bark and feared any noise. Sometimes the attack would not occur for several days and at others there would be two or three spells in a single day.

He was treated for worms with oil of chenopodium, chloroform and castor oil, on an empty stomach with good results.

Three weeks later he was sick again and another veterinarian who called, because I was in the hospital, pronounced it distemper. Five days later when the dog was brought to me again I found the temperature 104° Fahr., pulse 135 and respirations 45, slight cough, anorexia, kidneys and bowels sluggish, coat staring, muco-purulent discharge from the nose and pimple-like eruptions over the body. I administered serum and sodium cacodylate (10 cc of the former and three grains of the latter) and repeated in three days, and arsenates and nuclein three times a day with castor oil for the bowels. Improvement was marked with the exception of the eruptions. The appetite returned and the dog seemed well.

Two weeks later he had another nervous spell that left him exhausted for some time but following this everything was normal for three weeks when he began to be seized with one convulsion after another and finally one proved fatal.

I have had a hound, a pointer, and an Airedale act much the same way recently and am puzzled to account for the circumstance. The distemper symptoms occurred only in the collie.—G. A. F., Va.

Reply: Fits of barking and running in dogs are invariably attributed to worms by dog fanciers and canine specialists, although it is indeed doubtful if such is always the case. It has not even been proved that worms ever cause such mental conditions although it is becoming apparent that worms and their larvae do take some remarkable liberties in the living body of their host and might as a consequence be suspected of causing almost anything. French veterinarians speak of pseudo-rabies caused by dentition as a possible cause of these states.

From the large number of inquiries about this disorder and the lack of any proof as to the cause indicated there is a field here for fruitful investigation.

The symptoms displayed during one of the phases of this collie's sickness being clearly those of distemper leads one to suspect that these might be but complications of that disease.

A CASE OF FELINE BOTS

Enclosed herewith please find a parasite for identification.

I was called out this morning to see a cat said to be suffering from an abscess on its side. Upon examining the animal I found her to be a female tortoise-shell cat, in rather poor condition. On the right side of the thorax, in about the region of the fifth rib, was a pronounced swelling, with a small opening from which there was a mucopurulent discharge. The swelling was about the size of a large-sized hickory nut, and was apparently only under the skin. I enlarged the opening slightly, and squeezed out the accompanying parasite, one which I do not recognize or recall ever having read about. Can you please tell me what it is?

There is a similar parasite that is often found under the skin in rabbits. It appears to drop out when the cold weather comes on, and a supposition among the hunters is that the rabbits on account of this parasite, are only edible during the real cold weather.—M.J.H., N. J.

Reply, by Maurice C. Hall. The specimen in question is a larva of one of the bot-flies belonging to the family Estridae and belongs in the genus Cuterebra, using this generic name in its broad sense and disregarding the later genera which have been separated from the genus Cuterebra on the characters of the adult flies. The structure of the larvae in this group has not yet been sufficiently studied to permit of satisfactory identifications as regards the restricted genera or the species. The larvae of this genus are parasitic in the Rodentia (rodents) and the Lagomorpha (hares and rabbits), as a rule.

They are occasionally reported from cats and I have summarized the records of this sort in a paper published in the Journal of the American Veterinary Medical Association for July, 1921. Since the publication of that paper we have received from Dr. Kinsley an additional specimen collected from the cat, by Dr. A. Trickett, at Kansas City, Missouri, and another specimen collected from the cat by Dr.

Murray V. C. Howes, at Portland, Oregon.

The paper referred to reported a total of over nine cases of Cuterebra in the cat from the United States, and the two cases just noted, together with your case, shows that this parasite has been collected in this country in over twelve cases.

The belief among hunters to which you refer, that rabbits are not edible in the summer owing to the presence of these larvae, is a very common one, but it is hardly in accord with the general principles of pathology or with meat inspection practice. A localized lesion involving the skin and subcutaneous tissue and not accompanied by evidence of systematic disturbances due to infection, toxins, irritation, etc., would hardly warrant the condemnation of meats and in the absence of anything other than one or two of these larvae it would appear that such infested rabbits are edible.

Probably the belief that these rabbits are inedible is based on esthetic grounds which would probably be sufficient to develop that practice of avoiding the use of a meat which was itself cheap and easily obtained unless free from these larvae.

AIR EMBOLISM IN A PUP

I am writing you about a seven weeks old Irish terrier pup that had its rudimentary claws, on inside of fore legs, removed with scissors by a dog fancier and about five minutes later began to breathe very heavily and groan as if in pain .

The owner brought the pup to my office and about one hour after operation the pup died.

Post-mortem examination showed heart entirely empty and both lungs were completely congested, more solid than liver, with no other abnormal conditions.

I would be very glad to hear from some member of the staff of the journal as to what had occurred. Pup was perfectly healthy before operation.—E. L. B., N. J.

Reply: The death of the pup described, while not common, does occur in dogs following painful operations, such as amputation of the tail, dew claws, or ears. In all cases as you have yourself found, there were no post-mortem lesions to serve as a guide and for want of a better explanation we have always attributed these conditions to air embolism. You know it only requires a very small bit of air in an open vein to produce death if it finds its way to the heart.

We think, therefore, if you diagnose this case as a death from air embolism you are at least on safe ground until somebody can give you a better explanation.

LENGTH TO AMPUTATE AIREDALE TAILS

I would like to know how long a stump should be left in amputating the tail of Airedales, at what age the operation should be performed and the best method of procedure? —H. M. G., Ill.

Reply by G. P. Frost: The approved length of amputating the tails of Airedales is one joint less than one-half of the tail. This will give the proper length no matter at what age the operation is performed. The operation is done in the usual manner of amputating the tails of dogs.

GRANULOMA OF THE CONJUNCTIVA

I have a patient, a dog, where the haw has covered at least one-third of the eye; both eyes are affected. I cannot find the operation for removal of same in any literature. Would you outline briefly the operation, stating your usual success?—J. A. T., Va.

*Reply. You are informed that the usual way to remove these granulating growths on the membrana nictitans is to anesthetise the eye with a local anesthetic solution, pass a thread through it with a small, curved needle, draw upon the thread, and snip off the growth as deep as possible with a small, curved scissors.

A small animal hospital costing $75,000.00 is under construction by Dr. R. G. Owen, 186-188 Farwell avenue, Milwaukee, Wis. It is to be equipped with baths, swimming pool, laboratory and all that goes to meet the highest refinement in such establishments.

Leg weakness is usually found in young, growing chicks, and is caused by insufficient exercise and excessive feeding. This condition is manifested by weakness, particularly in the hock joint, permitting the leg to bend in any direction. It is readily cured by forced exercise and diminishing the diet.

There will be a little bleeding but this is never serious. Just set the dog aside for a few minutes and the bleeding will stop.

B-D PRODUCTS

Made for the Profession

CHAMPION

Simultaneous Vaccinating Outfit

No. W505-40-8T

FOR HOG CHOLERA SERUM AND VIRUS

Supplied Only Through Dealers

BECTON, DICKINSON & CO.

RUTHERFORD, N. J.

SEND FOR VETERINARY CATALOG

A New Mastitis Tube

(J. S. Koen)

Adjustable Feature

Actual Size

for Flavisol Udder Injections

Originated by **Dr. J. S. Koen,** Bloomington, Ill., especially for injecting FLAVISOL into the udder.

Tubes for both Viking and Champion Syringes in Stock.

In the course of Dr. Koen's extensive field work he has been impressed with the very good results FLAVISOL gives in Mastitis. He therefore devised the above mastitis tube which is adjustable to any sized teat.

Special Offer:—One tube free with each gallon Flavisol.

Zell-Straub Laboratories, Inc.

(Originators and Sole Producers of FLAVISOL)

Masonic Temple **Chicago, U. S. A.**

Queries and Answers

ESERIN OR ARECOLIN FOR CHOKE?

Please tell me which to use in the case of choke in horses, eserin or arecolin?—D. E. I., S. W.

Reply: A good dose of one to one and a half grains of eserin has always given us the best results in horses affected with esophageal obstruction. It is of no use, however, when the obstruction is formidable as in the case of large jabots, but never does any harm. In simple choke with ordinary horse forage the relief is sometimes quite prompt.

PERSISTENT MASTITIS

I have a condition in a cow patient that is puzzling and am writing you to obtain information through your query and answer column.

The cow, about the fifth month of lactation and pregnancy, one morning showed traces of blood in the form of clots in the right rear teat. Milk examination revealed small nodule at base of teat on inner aspect of the sinus, which showed no sensitiveness to pressure. Temperature, respiration, pulse, normal.

Several days later, I was called to see the cow and was shown milk from the other three teats, which had been in the cooler all night and exhibited the following condition and appearance to wit: Cream, thin, pale, collected in islands, floating in "whey"; "curd" precipitated on bottom of receptacle in lumps and granules. No odor, no disagreeable taste, in either the fresh or the overnight milk. The cow was tested for tuberculosis with negative results.

I then injected two doses of mastitis bacterin at intervals and heard no more from the case until lately.

The cow calved and on the ninth day the milk showed same condition, except the hemorrhage and a variation in that the cream collected in a very tough layer, the curd settling to bottom in lumps and granules as usual.

Injected mastitis bacterin again, but with no good results. Changed feeds, balanced the rations, purged with salts; administered mineral salts, formaldehyd, urotropin, all to no purpose, so am now searching for help.

If you or one of your efficient correspondents can and will relieve my ignorance, I would be everlastingly obliged. S. B. S., La.

Reply: You are dealing with a very bad case of infectious mastitis, probably streptococcic mastitis. It seems to me that you have carried out a line of treatment that is sensible in every way and could hardly be improved upon.

Our stereotyped plan of treating such cases is to give a good, brisk purgative, follow up with proper medicinal doses of formalin in oil, and administer mixed infection bacterin, and in addition, milk out frequently and gently.

In more severe cases injections of flavines given every second day will help. There are veterinarians nowadays who are using injections of pure ether, with good results. This, however, is something we have never personally used, and are giving it to you second-hand. On the other hand, the merits of flavines for this purpose is not questioned.

VERMINOUS BRONCHITIS

I am bothered a great deal with lung worms in calves in this region and would like a brief discussion as to the method of control and the best treatment. Mature animals are sometimes affected but they seem to resist the infestation while many of the calves die from what seems to be pneumonia on post mortem examination.—L. A. R., Ill.

Reply:—Lung worms in calves are common during the dry-pasture months, August and September, when the bronchi, bronchial tubes and air cells often become literally choked with the Strongylus micrurus, a fine thread-like worm. There is no way of preventing infestation where calves are allowed to run with the herd in the old dry pastures. It is best to keep the calves in the stable the first year or provide them with a virgin pasture that has not been contaminated by the adults of the herd. When the parasites are deep seated nothing will dislodge them, although irritating vapors inhaled or liquids injected into the tracheal may cause paroxysms of cough that will expell some of them. As a whole medica-

EAGLE
Clear Serum

"The Clear Without a Peer"

EAGLE
Full Blood Serum

Eagle—The Ace of all Serums

Watch for OUR MONTHLY SALES LETTER which enables you to buy EAGLE QUALITY PRODUCTS at attractive prices.

EAGLE SERUM SERVICE

"Available—Anytime—Anywhere"

The Eagle Company.....38 S. 7th St., Kansas City, Kans.
The Eagle Company.....Cedar Rapids, Iowa
The Eagle Company.....Ottumwa, Iowa
The Eagle Company.....Galesburg, Ill.
The Eagle Company.....Polo, Ill.
The Eagle Company.....Lanark, Ill.
The Eagle Company.....Altamont, Ill.
The Eagle Company.....St. Louis, Mo.
The Eagle Company.....Indianapolis, Ind.
The Eagle Company.....Akron, Ohio
The Eagle Company.....Columbus, Ohio
The Eagle Company.....Cleveland, Ohio
The Eagle Company.....Washington C. H., Ohio
The Eagle Company.....Nashville, Tenn.
Dr. W. G. Cook.....Findlay, Ohio
H. M. Atherton.....Washington, D. C.
Drs. Proctor & Southard.....Macon, Ga.

THE EAGLE CO.

KANSAS CITY, KANS. **NASHVILLE, TENN.**

tion is not a pronounced success. Turpentine and creosote are probably the best agents to use.

CONTRACT NOT TO PRACTICE IN COUNTY

Can you give me any information regarding the following? A partnership is formed between two practicing veterinarians. A contract is drawn, including a clause reading: "At dissolution of partnership, one of the partners will not enter into practice in said county." No specified time.

Cannot the one who said he would not enter into practice by signing the contract, reenter into practice in the same county without a great deal of fear by the law from the other?

Such is the condition existing between myself and a practitioner here—I will certainly appreciate any information you may be able to give me. I intend to enter into practice as a competitor to the gentleman holding the above contract and I would be pleased to know as to the extent of trouble he might cause, if any.

Reply: Your old partner, who holds the contract mentioned is, of course, in a position to bring action against you for any damage that might be shown to accrue out of your activities. Whether it is fair or not, it is, nevertheless, true that the defendant in these cases generally wins. It seems to me that it would be advisable for you to consult a lawyer, who, after reading the contract you have signed, would be in a better position to advise.

WATERING HORSES

Should horses be watered immediately after a grain ration? D. A. S., Minn.

Reply:—No. They should never be watered for at least an hour after having eaten a full grain ration. A few swallows of water after meals will do no harm while several gallons would displace the chyme to the intestines before the process of chymification is complete. Watering horses after meals is one of the reasons horses suffer so often from colics.

Hay, on the contrary, being digested largely in the intestinal tract may be washed back with large drafts of water almost immediately without doing harm.

Dr. G. W. Winslow has moved from Sheldon, N. D., to Grand Forks, where he has purchased a going practice and hospital.

SIMPLICITY
Canine
Operating Table

Locks Rigidly—All Positions
Every Necessary Adjustment
Neat, Sanitary, Durable
Fully Guaranteed

Our Other Appliances:

Equine Tables
Stocks
Slings
Surgical Units
Kennels, Etc.

Veterinary Specialty Co.

531 S. Peoria St. Chicago, Ill.

Don't Risk a Serum Shortage!

Stockmen in your community are depending upon YOU to protect the health of their stock. Don't take chances on a serum shortage or serums of uncertain quality.

The only safe way is to depend upon a long-established concern of highest standing and with exceptional facilities for serving your needs. Then you are assured of getting highest quality serums when you want them and in any quantity you need.

The United Serum Company offers you such assurance. Our vast facilities can be relied upon to keep you well supplied at all times.

You are never in doubt about the results when you use United Serums. United Serums are always of uniform high quality, pure, dependable and of maximum potency.

United Serums
W&O Brand Universal Brand
"Protect Hogs The World Over"

United Serums
W&O Brand Universal Brand
"Protect Hogs The World Over"

UNITED SERUMS CAN BE OBTAINED

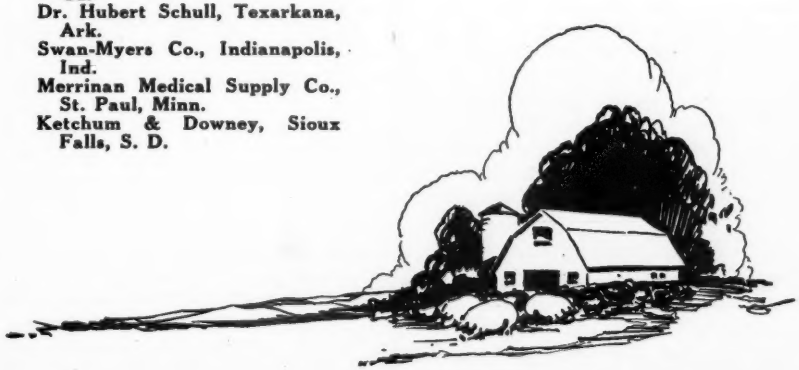
From Any of Our Branches or Distributors

BRANCHES

United Serum Co., Omaha, Neb.
United Serum Co., Waterloo, Iowa
United Serum Co., Cedar Rapids, Iowa
United Serum Co., Des Moines, Iowa
United Serum Co., East St. Louis, Ill.
United Serum Co., Wichita, Kans.
United Serum Co., Oklahoma City, Okla.
United Serum Co., Columbus, Ohio
United Serum Co., Danville, Ill.

DISTRIBUTORS

W. J. Balzer, Peoria, Ill.
Peoria Serum Co., Peoria, Ill.
Kentucky Serum Co., 409 S. Jackson, Louisville, Ky.
Southeastern Labs., Atlanta, Ga.
Dr. Hubert Schull, Texarkana, Ark.
Swan-Myers Co., Indianapolis, Ind.
Merrinan Medical Supply Co., St. Paul, Minn.
Ketchum & Downey, Sioux Falls, S. D.
Seattle Vet. Supply Co., Seattle, Wash.
Great Western Serum Co., 820 Exchange Ave., Chicago, Ill.



UNITED SERUM COMPANY
Kansas City, Kansas

Books You Need

Essentials of Veterinary Physiology

By D. Noel Paton, M. D., B. Sc. G., LL. D., F. R. S., Professor of Physiology, University of Glasgow, and John Boyd Orr, D. S. O., M. C., M. A., M. D., D. Sc., Director, Rowett Institute for Research in Animal Nutrition, etc. Third Edition. Revised and enlarged. This work gives the essentials of general physiology and of the special physiology of the domestic animals in a form suitable to the requirements of Students and Practitioners of Veterinary Medicine. 693 pages, illustrated by 246 engravings. $6.50 net.

Veterinary Hygiene

By R. G. Linton, M. R. C. V. S., Professor of Hygiene, Royal (Dick) Veterinary College, Edinburgh. For Veterinary Students, Veterinary Practitioners, and others concerned with the well-being of animals. 443 pages, with 92 original illustrations. $6.00 net.

Topographical Anatomy of the Limbs of the Horse

By O. Charnock Bradley, M. D., D. Sc., M. R. C. V. S., Principal, Royal Veterinary College, Edinburgh. 182 pages, illustrated by 115 engravings in black and colors. $5.00 net. This well illustrated volume combines the features of a descriptive anatomy with those of a practical dissecting manual. The B. N. A. terminology is used.

Ready Soon — Bradley's Topographical Anatomy of the Thorax and Abdomen of the Horse.—Also Anatomy of the Head and Neck of the Horse

Other Books Helpful to Veterinarians:

Bailey's Text Book of Normal Histology. Sixth revised edition, 751 pages, 419 illustrations, and a folding chart, $5.50 net.

Bailey and Miller's Text Book of Embryology. Fourth edition, 681 pages, 503 engravings, $6.00 net.

Delafield and Prudden and Wood's Text Book of Pathology. Twelfth edition, 1360 pages, 15 full page plates and 809 illustrations in black and colors. $9.00 net.

Kirke's Handbook of Physiology (Greene). Tenth American revision, 799 pages, 2 plates, 509 engravings, $5.00 net.

Stedman's Practical Medical Dictionary. Includes veterinary terms. New seventh edition, 1160 pages, fully illustrated, thumb indexed, $7.00 net.

Students' Aid Series (Pocket Size):

Anatomy ($1.75); Bacteriology ($1.75); Chemistry ($2.00); Pathology ($1.75); Physiology ($1.75); and others.

WILLIAM WOOD & CO., (Est. 1804) 51 Fifth Ave., New York

THE CAUSE OF RINGBONE AND SIDE BONE

Do your experts believe as we are being taught that diet has an etiological bearing on ringbone and side bone of horses? In what particular way does deficiency in diet content cause the production of bone tissue?

Reply: It is not likely that diet has much to do with the cause of sidebone and ringbones because all herbivora do not have them. The fact that these osseous diseases do not affect all herbivora seems to indicate that they are due to something inherent in solidungulata.

INJURED STIFLE

I have a case wherein a boar tusked a horse in the stifle joint, opening the joint and making an extremely sore and lame horse. Considering the size of the wound, there is very little swelling, but intense (lameness) pain and the horse is falling off in flesh very fast. What are the best drugs and method to use in such a case?—W. H. L., Ind.

Reply: I have no doubt from the description of your case that you are dealing with a real case of infected open joint, although you do not state whether or not the wound is discharging synovia. If this is the case, there is very little hope for your patient.

The best agent known today for injecting into open joints is one of the flavines, either proflavine or flavisol.

If this could be worked into every part of the joint capsule, it is sometimes possible to turn the tide of such a case.

JENNETS, JACKS, MULES, ET AL.

1. Why does a jennet not breed? 2. How would you breed to get a jack? 3. If a male mule is bred to a mare will she conceive? 4. How does urine get from the bladder to the umbilicus? 5. How could a solution be forced to the liver?—C. H., Ia.

Reply 1. Jennets do breed if in good health and bred to the male of the species. 2. Breed a jack to a jennet and trust to luck that the issue will be a male. 3. No. 4. Through the urachus. 5. Through the umbilical vein.

The Arkansas State Veterinary Medical Association, co-operating with Dr. J. H. Bux, state veterinarian, have planned a "veterinary day" at the Arkansas State Fair, October 9-15, for the benefit of farmers and stockmen.

THE CAUSE OF HEAVES

What is the cause of heaves? I recently attended a veterinary meeting where this matter was discussed but did not get the drift of the theories brought out. G. M., Pa.

Reply: Heaves in horses is analogous to the distressed respirations of the old cornet player. It is caused by overtaxing the tissues that comprise walls of the pulmonary air-cells. They dilate and even break down under pressure, and in this damaged state retain air that can not be expelled by normal respiratory efforts. We do not believe in the nervous theory of heaves. With us it is physical injury.

PLANTAR FLEXION IN CALVES

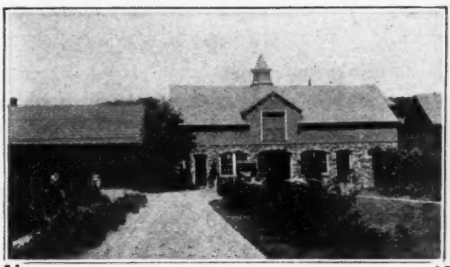
Please advise me as to the diagnosis of two calves that are healthy enough except that they cripple over on the hind feet, standing on their toes, and have a bad discharge from the eyes. Is this rheumatism?—A. R. C., Ala.

Reply: Deformations of this character are common affections of young animals. It is more common in colts, however, than in calves. The only remedy in chronic cases is to correct the deformity by performing tendonotomy and supporting the legs with appropriate braces while the surgical gap is filling in.

NECROSIS OF THE INFERIOR MAXILLA
(Removal of the Sequestrum)

A seven-year-old thoroughbred mare has an enlargement the size of a hen's egg opposite the first molar of the lower jaw, from which some pus is escaping. The condition has existed for months. Being intractable she was cast to make an examination. As the teeth were sound a diagnosis of necrosed bone was made. An incision was made along the whole length of the enlargement and with the aid of a curette a sequestrum an inch and a half long was removed. The wound healed promptly in two weeks. What is the cause of such a condition? E. F. J., B. W. I.

Reply:—The mare had a necrosed jaw from a bit injury, a condition that is very common in horses bitted with curb bits and in polo ponies or other horses whose mouths are roughly handled with the reins. It starts as a periostitis at the seat of the bit and generally ends by the exfoliation of a small, elongated spicula, but in other cases the inflammatory process involves greater areas and tumefies the whole ramus and causes exfoliation of a large segment.



Entrance to Our Laboratories

The
Goshen
Laboratories
Inc.
DE VINE

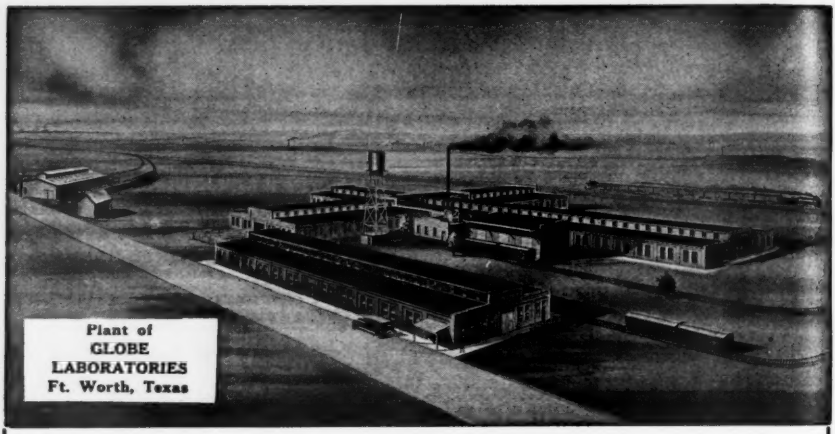
Goshen, New York

The Practitioners' House

FOUNDED BY A PRACTITIONER
MANNED BY PRACTITIONERS
SERVES THE PRACTITIONER

Would you be interested in a practical, satisfactory way of handling retained placentae and pneumonias in cattle? If so, write us.

The Globe



STANDARD OF THE WORLD

GLOBE VIRUS—SCIENCE

—Virus the Key to Potency—

1. Virus power that produces active immunity.
2. Serum potency that effectively holds.
3. Globe label guarantees.
4. Globe and success are synonymous.

INDUSTRY—INTELLIGENCE—INTEGRITY

Laboratories

ENERGY—EFFICIENCY—DEPENDABILITY

Clear Anti-Hog Cholera Serum
Concentrated Clear Anti-Hog Cholera Serum
Regular Anti-Hog Cholera Serum
Hog Cholera Virus
Mixed Infection Bacterin
Swine Plague Bacterin
Hemorrhagic Septicemia Bacterin—Bovine
Hemorrhagic Septicemia Bacterin—Ovine
Abortion Bacterin (Bovine)

GLOBE BLACKLEG AGGRESSIN

Globe service the snappiest service on the **Globe**

Our Distributing Offices

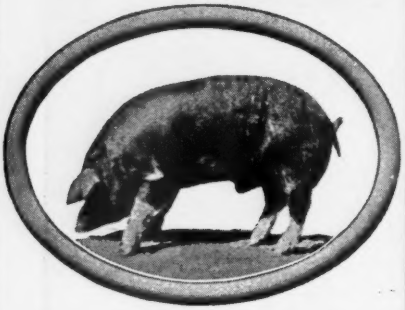
Globe Serum Company, 314 Nebraska St., Sioux City, Iowa
Barber & Cochran, Live Stock Exchange Bldg., Oklahoma City, Okla.
Brashier Brothers, 202 W. Capitol St., Jackson, Miss.
Burris & Mays, P. O. Box 511, Shreveport, La.
Coombs Drug Company, Salt Lake City, Utah
Globe Laboratories, Tallahassee, Florida
Globe Serum Company, St. Regis Hotel, El Paso, Texas.
Globe Serum Company, P. O. Box 625, Dr. O. E. Lindburg, Mgr., Lincoln, Nebr.
Globe Serum Company, 300 Live Stock Exchange Bldg., Denver, Colo.
Tennessee Serum Company, 609 Broadway, Nashville, Tenn.
Thatcher Serum Company, Riverside, Calif.
White Cross Serum Co., C. B. Simmons, D.V.S., Mgr., Live Stock Exchange Bldg., National Stock Yards, Ill.
White Cross Serum Co., C. B. Simmons, D.V.S., Mgr., 309 Saks Bldg., Indianapolis, Ind.
White Cross Serum Co., C. B. Simmons, D.V.S., Mgr., 803 East Monroe St., Springfield, Ill.

Globe Label—Your Insurance Policy

GLOBE LABORATORIES

FORT WORTH **TEXAS**

Protect Your Client and yourself with an American Policy



We insure the man who DOES NOT BELIEVE IN VACCINATION and vaccinate his herd if he needs it. We VACCINATE EVERY HERD we insure at the FIRST INDICATION of cholera. Our vaccination policy offers complete protection to your client and to you.

Our commercial hog policy provides all needed veterinary service free to policyholders THROUGH THE LOCAL VETERINARIAN. We deal with graduate veterinarians, only.

Less than 25 per cent of the hogs have ever been vaccinated. **Let us help you educate the other 75 per cent by introducing** your services by means of our insurance.

We have excellent openings for local and district agents where we are not represented. Write for our agency plan and commissions paid.

AMERICAN LIVE STOCK INSURANCE COMPANY

Home Office:

OMAHA, NEBRASKA

SOME POINTS ABOUT SILAGE

Why does silage mold? Is it a good food for dairy cows? Does silage injure the teeth? H. S., Wis.

1. Silage molds chiefly from leaks in the silo, from air pockets due to uneven tamping, and from a lack of moisture. Leaks are usually due to ill-fitting doors but occur from crevices anywhere. When these leaks can not be closed they may be less harmful by covering them up with building paper as the silo is being filled. It is the custom of some to unroll a roll of building paper over them from below upward as fast as the silo fills up. In the case of door-leaks the roll should overlap the door area a foot or more on each side. By suspending such a roll on a round stick and suspending it with sash cord to the door-rod above the one just put in it is a simple matter to thus cover up all leaks of this kind.

2. Corn-silage is a good roughage for cows, but must not be thought of as a balanced ration. Silage of any kind must enter into the ration as an equivalent of the material use in making it, and no more. For example, corn silage is equivalent to corn and corn fodder, plus its succulency. It lacks the proteids required to complete a proper ration for any special animal.

3. So far as we have been able to observe silage does not damage the teeth.

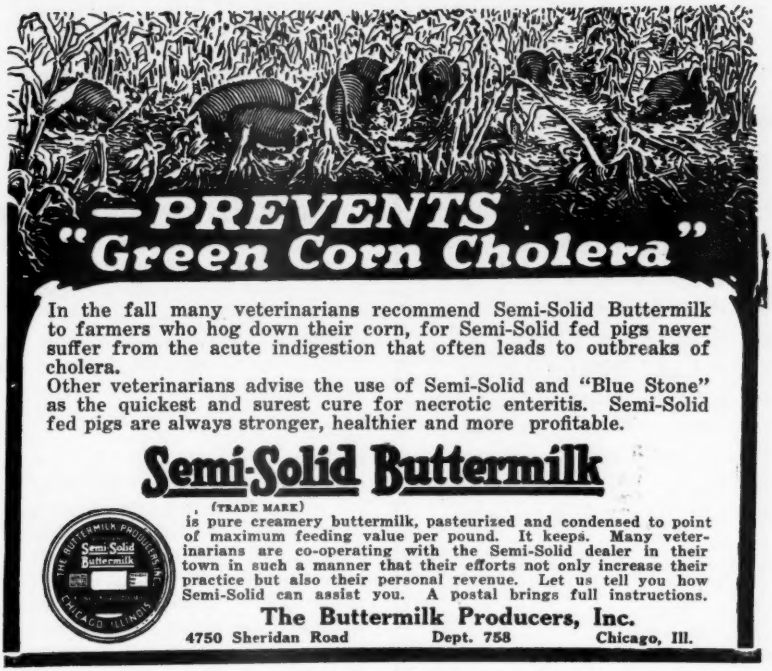
FORAGE POISONING IN A MARE

The owner reported mare, eight years old, off feed and sluggish on afternoon of September 5. On September 6 the following symptoms were observed: difficulty in standing and could not move easily. At this time the temperature was 105° F., and pulse 60. She was inclined to stand still or move in a circle. When placed near a building or support, she would lean heavily against it. During the morning of the 6th, the mare went down and remained in a comatose state, dying during the night. Autopsy revealed no lesions, save congestion of the meningeal vessels.

What is the diagnosis and best line of treatment for such conditions? J. H. B., N. C.

Reply: The mare you describe, is undoubtedly a victim of some form of forage poisoning, and in view of the rapid course of the disease, was probably a fatal case from the beginning.

The best treatment for such conditions we know today is rapid purgation, a dose of eserin or arecolin, followed by an aloetic ball, to-


—PREVENTS
"Green Corn Cholera"
In the fall many veterinarians recommend Semi-Solid Buttermilk to farmers who hog down their corn, for Semi-Solid fed pigs never suffer from the acute indigestion that often leads to outbreaks of cholera.
Other veterinarians advise the use of Semi-Solid and "Blue Stone" as the quickest and surest cure for necrotic enteritis. Semi-Solid fed pigs are always stronger, healthier and more profitable.
Semi-Solid Buttermilk
(TRADE MARK)
is pure creamery buttermilk, pasteurized and condensed to point of maximum feeding value per pound. It keeps. Many veterinarians are co-operating with the Semi-Solid dealer in their town in such a manner that their efforts not only increase their practice but also their personal revenue. Let us tell you how Semi-Solid can assist you. A postal brings full instructions.
The Buttermilk Producers, Inc.
4750 Sheridan Road Dept. 758 Chicago, Ill.

gether with the abstraction of a considerable amount of blood from the jugular vein. This treatment sometimes cures the milder cases.

There is nothing surprising about the lesionless condition of the mare, revealed at the autopsy, because animals dying so quickly have not been sick long enough to produce macroscopic lesions.

CAPPED HOCK

What do you consider the best treatment for capped hock? C. C. M., Okla.

Reply: The best treatment for a new capped hock, in which the enlargement is due to fluid, is to lance it at the lowest point, under strictly aseptic precautions, keep the opening from admitting infection by proper wadding with antiseptic plugs, remove the plug twice a day and gently squeeze out the accumulated serum, all of the while keeping the horse in a standing position, in all about twenty days. This treatment will cure any capped hock of recent occurrence.

One that has become hard from thickening of the sac wall is difficult to cure. By repeated blisters of biniodid of mercury and keeping the horse in a big box stall that is well bedded to assure against any additional bruising when lying down, it is possible to reduce these enlargements to a considerable extent, but often the prevention of physical injury is very difficult to carry out, and the continued injury prevents recovery.

WANTS TREATMENT FOR MASTITIS

I am writing to ask you if there is any satisfactory treatment for garget. Several of my clients having a lot of trouble, one having seven cows affected. Some cows seem to get only a light attack of it, while others get very stiff in their movements. The appetite is good, but almost all dry up.

Some have it only in one quarter and others in all four. I have never had very good results in treating such cases and will be very thankful for any assistance you could give me. Would this be any form of contagious mammitis?—C. A. K., Ont.

*Reply: The treatment for mastitis that seems to be giving the best results is active purgation, formalin in oil internally twice a day, the administration of mixed mastitis bacterins, frequent milking, and in bad cases, injections of the affected teats with flavisol or acriflavine.

It seems that the injection of the milk sinus

He was a pretty bad fellow up here on earth and when he died he went down to the depths below.

On arriving there he observed thousands of hogs dying of cholera.

"Say," said he to one of the devils, "this looks like a fine location for practice. I believe I'll start out to do some vaccinating. Where can I get some serum and virus?"

"We have no serum or virus down here," replied the little devil. "That's the hell of it."

Some living veterinarians have "hell on Earth."

But they are not users of Grain Belt Serum. Practitioners who use Grain Belt Serum do not know the meaning of "comebacks."

Grain Belt Serum is "right" always.

Produced by

Grain Belt Supply Company

4901 South 33rd Street

Omaha, Neb.

Branch office:—

409 South Federal Avenue
MASON CITY, IOWA

Drs. O. M. Walker and H. C. Kruger, Road Representatives.

with any of the flavine compounds is proving to be a real boom in the treatment of mastitis, and at least should not at this time be omitted. All mastitis should be regarded as contagious and the patients should be handled in the way to prevent its spread to other animals. See page 609.

ETIOLOGY OF SUMMER SORES

What is the cause of summer sores? Is it true that flies are the carriers of the parasite that is said to be found in these annoying sores?—B. J., La.

Reply:—Summer sores develop from parasite infestation of existing wounds by flies, both the common house fly (Musca domestica) and the stable fly (Stomoxys irritans). Railliet and Henry have classified the parasite as a spiropteres of the genius Habronema. According to these authors the larvae pass from the wound to the stomach where they develop to maturity. The adult yields embryos which pass off with the excrement whence they penetrate the fly larvae (maggots). The adult fly thus infested deposits the undeveloped parasites in the wound, completing the cycle. These findings have not been confirmed in this country.

As the ascarid ova are in the old hog lot and pasture and on the skin and teat of the sow, clean uncontaminated lots should be provided for the sow previous to farrowing and she should be thoroughly scrubbed to remove all ova, prior to placing in clean quarters.

Virus should not be used in swine affected with necrotic enteritis. If swine are simultaneously affected with hog cholera and necrotic enteritis, it is advisable to use anti-hog cholera serum and prescribe for the necrotic enteritis. It may be necessary to use serum and virus about one month after the serum treatment alone.

"Baka," a trotter bred in Austria has been sent to the United States to test the showing he can make among American bred horses. He is eligible to the 2:10 class and will be trained and driven by Fred Edman in some of the later events of the trotting season, having arrived too late to get into condition for the early events of the Grand circuit.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

Snow of the Mountain

Would you please tell me what kind of a weed this is and if it is poison?—L. J., Ia.

Reply: The specimen sent in is what is known as Snow on the Mountain (Euphorbia marginata), a well-known plant of the west, common in western Iowa, and especially common in the Rocky Mountain region from Texas to Montana. This weed like all other spurges has a milky juice and the milky juice is more or less acrid. Dr. Chestnut is authority for the statement that in Texas the milky juice of this plant is used to brand cattle, and it is said that the honey obtained from the plant is acrid, so it cannot be used.

There are Many Species

Dr. White, in his Dermatitis venenata, has this to say of the species of the genus:—"More than one hundred species of Euphorbia, or spurge, grow in the United States, either indigenous or immigrants from Europe. Of every species Loudon says the juice is so acrid as to corrode and ulcerate the body wherever applied; and of **E. resinfera,** from which the official euphorbium is obtained.

Is Used for Warts

Van Hasselt states that the juice of several species is used by quacks to remove warts, freckles, as depilatory, etc.; and that the aplication of the juice, powder and extract produces not only erysipelatous, pustular and phlegmonous inflammation, but even gangrene. In one case mentioned the whole abdominal wall became the seat of gangrene.

Of our native species Bigelow says that the juice of several was used in his day to destroy warts, and Gray describes them all as containing an acrid, poisonous juice. The most active of them are **E. corollata, E. ipecacuannae,** and **E. lathyris.** The first of these, commonly called snake-milk, has been used for blistering purposes, and the dispensatory states that the bruised root will vesicate the skin.

Troublesome to Handle

Mr. Cheney informs me that the juice of **E. ipecacuanhae** is quite troublesome to many who collect and handle it; and Bazin states that the dust of **E. lathyris,** growing both in Europe and in this country, causes redness, painful swelling and vesicles upon the workmen employed in handling it.

Dr. Millspaugh says it causes brilliant, staring, wide-open eyes, dilated pupils; death-like pallor of the countenance; retching and vomiting; violet purgation, stools frequent, copious and in some cases bloody, irregular pulse; whole body cold and rigid, followed by heat and perspiration. M. M. E. Sudour and A. Caraven-Cachin state that emesis always precedes purgation, and that the seeds have an irritating action upon the mucous membrane of the intestinal canal, principally in the larger intestines. They divide the effects into three stages: (a) the cold stage, including vomiting and diarrhea; (b) the stage of excitation, including nervousness, vertigo and delirium; (c) the state of reaction, including heat and copious sweat.

ACTION OF POISON IVY

E. D. Brown (Jour. of Therapeutic Pathology, Vol. 17-335) conducted some experiments to ascertain the action of poison ivy. He placed a centimeter square of leaf to the arm and held it in place with adhesive plaster. In some cases there was a reaction in 24 hours. Tincture made from the leaf also caused a reaction. He obtained a fixed oil which is probably the taxicodendrol of Pfaff. Every case where reaction occurred it was found when once poisoned that the person became more susceptible later.

NOTES ON DERMATITIS VENENATA
(Oak Dermatitis)

An interesting article in the British Journal of Dermatology and Syphilis (Vol. 34-65) states that a French laborer was poisoned by carrying the wet branches of a recently cut sapling on the right shoulder. The same evening the right cheek, ear and both hands began to smart and become painful. The following day the parts were red and swollen with an intense itching, and finally the whole of the genital region developed an eruption in

Antiphlogistine

Is a Valuable Aid to Veterinarians in

EQUINE BOVINE CANINE FELINE PRACTICE

PNEUMONIA
TENDINITIS
SPRAINS
SCRATCHES
ORCHITIS
CAPPED KNEE
INFLATED GLANDS
ABSCESSES
BRUISES
BURNS
BOG SPAVIN
HARNESS GALLS

Yield Promptly to

ANTIPHLOGISTINE

Applied Hot and Thick and Covered With Cotton

Send for Booklet and Sample

The Denver Chemical Mfg. Co.
New York

which exudation and encrustation occurred. Several persons in the village were effected the same way when handling freshly cut oak. After study of the problem and the exclusion of certain other plants the author concludes that the poisoning was due to oak.

VITAMINS AND THEIR RELATION TO HEALTH AND DISEASE

Dr. A. D. Emmett (Therapeutic Gazette, Vol. 46-17) has brought together some interesting facts on vitamins and their relation to disease. The subject is discussed under appetite, growth and digestive disorders, spleen, teeth, etc. The various vitamins are discussed under "Food Hormones are Important." Food hormones when less in quantity may cause alterations in the metabolism of the cells. Appetite is poor and digestion retarded and assimilation lessened. The patient should be given a good supply of vitamins. The author recommends concentrated pharmaceutical products, such as cod-liver oil and such fat soluble vitamins as butter, or the products prepared from brewer's yeast.

CLOVER MILDEW A SERIOUS MENACE

Clover mildew is known to botanists as Eryphe communis and is common everywhere in the U. S., especially in the northern districts. A recent letter issued by the plant disease survey of the U. S. department of agriculture indicates that there is an epizootic of the disease. I have seen it in every clover field I have entered this year. Naturally the question arises whether it is injurious to live stock. My opinion is that it is poisonous.

Irritate Intestinal Mucosa

May I say that mildew of various kinds has produced a form of irritation which acts injuriously upon the mucous membranes of the intestinal tract, the mouth. In addition hay containing it will be very dusty. Therefore it seems to me the presence of this mildew over the country is a serious menace. Fungi of various kinds are responsible for troubles. I quote from J. R. Mohler with reference to clover rust:

"Several attempts have been made by the writer to determine the exact cause and also to transmit the disease to other animals by direct inoculation, but with negative results. Suspicion, however, has been directed by various observers to the uromyces and the red and black rusts that occur in clovers. These

fungi cause very severe irritation of the lining membrane of the mouth, producing sometimes a catarrhal, at other times an aphthous, and occasionally an ulcerous stomatitis.

Renders Hay Worthless

I have this comment to make on the trouble from the mildew. This species is abundant and often causes serious trouble; it certainly renders the hay nearly worthless to be fed to animals. It often, no doubt, gives rise to a stomatitis such as is described for other fungi.

FOOL'S PARSLEY

A correspondent from Kansas sends a specimen of what appears to be Fool's Parsley (Aethusa cynapium). Fool's Parsley is said by a correspondent to be poisonous to stock in New Mexico. It is a well known annual European plant with white flowers, much divided leaves and petiole dilated at the base, which has become naturalized in eastern North America. Its distribution is given as Nova Scotia, New England to Pennsylvania and New York.

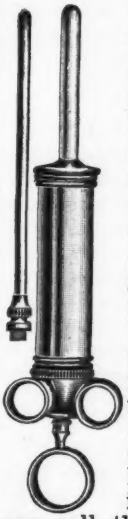
Plant Poisonous

The plant contains the alkaloid Cynapin, and a coniin-like alkaloid. One physician in England regards the plant as non-poisonous, even recommending it as a pot herb or for salad uses. On the other hand, numerous cases of poisoning have been recorded.

The following may serve as an illustration which is recorded by Dr. Millspaugh from a statement made many years ago. He records the experiments made on animals. Seven ounces of juicy leaves were given to a strong dog and the esophagus tied; twenty minutes thereafter the dog became sick. He stretched out his limbs, and lay on his stomach and could not be aroused. The pupils were scarcely dilated, the pulsations of the heart were slow and strong. The extremities were agitated by convulsive movements; the animal threw himself from one side to the other, and died an hour after taking the poison.

The postmortem examination showed that the heart was contracted and the stomach was found to be full of poison. In domestic animals it causes stupor, paralysis and convulsions. The common name indicates that it is sometimes mistaken for parsley with injurious results.

Why Lend Syringes, When You Can Sell Them at a Profit?



When you leave medicine to be given by the client, he must have some way to give it. If you lend him your last syringe, you may need it an hour afterward. When several syringes are loaned you may forget where some of them are and never get them back. You don't make money by temporizing with a demand that you could supply at a profit. Every one of your clients who hasn't a dose syringe is a live prospect. You can sell them all one of these metal syringes if you try.

We can supply you with these two-pipe heavy non-breakable dose syringes in one ounce size at 80c each, or $8.00 dozen; two ounce size 90c each, or $9.00 dozen. Specify one or three ring. These Syringes are guaranteed to please.

Clip the coupon now.

CLIP ALONG THIS LINE

Frank S. Betz Company
Hammond, Ind.

Inclosed find $..... for which send .....dozen ..... ounce Supreme Syringes.

Name .....

Town .....

State .....

LOOKING BACKWARD

The segregation of the sick from well animals was first urged by Columella, 55 A. D. Columella was a Roman citizen born at Cadiz at the beginning of the Christian era. He wrote twelve volumes on agriculture of which two were devoted to veterinary science.

In dealing with animal plagues Columella said, "The diseased must be separated from the sound, that not so much as one may come among them which may with contagion infect the rest."

Columella discussed the control of sex and referred to the views of Democritus Abderites who 500 years earlier or B. C. 456 wrote that male and female produce can be obtained at will by binding up one or the other testicle, females being produced by the left and males by the right organ. These teachings of Democritus are still, after 2500 years being repeated and is believed by many today, although repeated experiments have shown it to be an error. Democritus was a famous Greek philosopher and a student of Socrates.

Columella described mad itch in cattle and called it the worst of bovine plagues. Curiously enough he ascribed its cause to eating fodder tainted with the vomit of hogs. At the present time this malady, which is probably hemorrhagic septicemia, is frequently seen in cattle that eat the rejected cuds of hogs fed on green corn fodder. The cuds ferment rapidly in hot weather and seem a delectable tidbit for the cattle turned into the hog lot to clean up the feeding ground where hogs are given green corn stalks. Columella probably referred to these cuds, errors in transcribing and translating by those unfamiliar with the condition likely account for his saying "vomit of sick pigs."

Ruffus (12th century) was the first veterinarian to adopt a definite nomenclature for the diseases of animals. He listed over seventy diseases under definite names based upon some characteristic feature. Many of these names are in use today.

Another paragraph reads: "If he treated an ox or an ass for a severe wound and cause it to die, he shall give the quarter of its price to the owner of the ox or ass.

SANITARY OPERATING TABLE
FOR VACCINATING SWINE

Practical - Satisfactory

Simple to Operate

Welded Steel, Strong, Durable

Folds—Easily Carried

Business Getter—Time Saver

Price $40.00—Send for Literature

Dr. C. A. Clark, College Corner, O.

ECHOES OF THE ST. LOUIS CONVENTION

(By Brenner)

Past presidents of the A.V.M.A. at the convention were: Drs. Brenton, Moore, Cotton, White, Butler, Torrance, Mohler and Cary.

"Well done," was the general opinion of Ex-president Kinsley's conduct in office.

"Congratulations," was the greeting of the assemblage to President-elect Welch.

The total registration was little in excess of 500. This included the women and visitors. An even 100 women were registered.

To those eminent cattle specialists, Devine of New York and Ferguson of Wisconsin, must go the honor of being the "beau brummels of the convention."

Dr. Devine of New York, 6 ft. 4 in., was the tallest man present. Dr. A. F. Ezzell of Bloomfield, Mo., 5 ft. 3, weight 123 pounds, was the smallest man there.

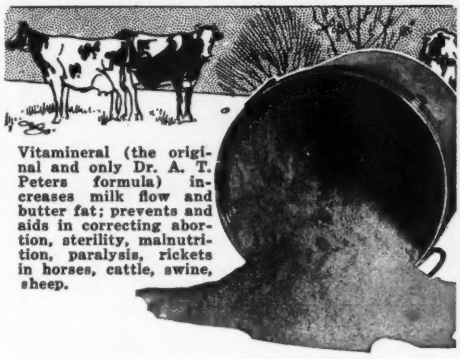
Dr. C. M. Merriman of Mt. Pulaski, Ill., Dr. A. K. Merriman of Latham, Ill., and Dr. R. W. Merriman of Ames, Iowa, brothers, represented an interesting trio.

Among the more distinguished looking members present were Dr. Mohler of Washington, D. C., Dr. Jenneman of St. Louis and Dr. Tait Butler of Memphis.

It was the twenty-ninth meeting for Dr. Brenton of Detroit, the twenty-sixth for Dr. G. A. Johnson of Kansas City and the twenty-sixth for Dr. and Mrs. A. H. Baker of Chicago.

Iowa State College was well represented in Drs. Stange, Bemis and Bergman, Dr. D. S. White was present from Ohio State, Drs. Moore, Udall and Milks from Cornell, Dr. Klein from the University of Pennsylvania, Dr. C. A. Cary from Alabama Polytechnic school, Dr. Craig from the Indiana Veterinary College, Drs. Francis and Marsteller from the Texas Agricultural College, Dr. Dykstra from the Kansas State Agricultural College, Dr. Kingman of Colorado.

We saw this sextette at the St. Louis meeting: Drs. Tait Butler, C. A. Cary, A. T. Peters, W. H. Kelly, Mark Francis and A. H. Baker.



Vitamineral (the original and only Dr. A. T. Peters formula) increases milk flow and butter fat; prevents and aids in correcting abortion, sterility, malnutrition, paralysis, rickets in horses, cattle, swine, sheep.

VITAMINERAL

The Summer is nearly over and the live stock breeders are preparing to take care of their stock for the Winter. Dairy cattle will be taken from the pasture and placed in dry lots and stables.

It is then that disorders may occur due to deficiencies of minerals and vitamines for it is during this period that these animals, which are under a heavy strain, are drawing on their reserves and it is then that they should be supplied with a vitamine mineral which will keep them in the very best of condition and, thereby correcting abortion, sterility, malnutrition, paralysis, rickets in horses, cattle, swine and sheep. Conditions illustrated above have been brought back to better than normal health and vigor with VITAMINERAL.

VITAMINERAL is the only agent containing sufficient Vitamine B (dried yeast) with minerals to successfully restore enfeebled tissues and destroy life-taking bacteria.

Endorsed and recommended by Veterinarians and breeders everywhere. Costs less than 1c per day per head. Furnished only to Veterinarians.

VITA Worm Capsules

Millions used yearly to eliminate all stomach and intestinal worms. To Veterinarians only, per hundred, $3.00.

Order VITAMINERAL and Vita Worm Capsules direct or from these

DISTRIBUTORS

Dr. Ralph W. Balkam, Springfield, Mass.
Galloway Brothers, Richmond, Va.
Goshen Laboratories, Goshen, New York.
Holmes Serum Company, Springfield, Ill.
Kentucky Serum Company, Louisville, Ky.
Dr. L. E. Miller, Corpus Christi, Texas.
Norden Laboratories, Lincoln, Neb.
Sioux City Serum Co., Sioux City, Iowa.
Southeastern Laboratories, Atlanta, Ga.
Dr. C. Stewart, Cullman, Ala.
Tennessee Serum Company, Nashville, Tenn.

Vitamineral Products Co.

PEORIA, ILLINOIS

FER-SUL
and
Fer-sul-ine

are now

"STOCK" REMEDIES with many veterinarians.

THEY TELL US of splendid results obtained where they have used these preparations for

ABORTION (certain conditions)
ANTISEPTIC WASH
BED SORES
CANKER (Poultry)
CANKERED FROG
CANKERED EAR
CHICKEN POX (Sorehead)
DIARRHOEA
ECZEMA
FOUL HOOF OR FOOT ROT
FOUL OR DISCHARGING SORES
FISTULA OF THE WITHERS
HOG CHOLERA
(As a spray to keep down odor and flies for superficial sores—for diarrhoea)
GALLS (Harness or saddle)
GREASY HEEL
HEALING: ASTRINGENT ANTISEPTIC
HEMORRHAGE
MANGE
OLD WOUNDS
POLL EVIL
PROUD FLESH
ROUP
SCRATCHES
STREET NAILS, etc.
STYPTIC
THRUSH
VARIOLA (Cow Pox)

They were at the Nashville meeting just twenty-five years ago.

Illinois sent by far the largest delegation.

The most prosperous looking practitioner there was Dr. Walters of Tulsa, Okla. They say that "oil and practice mixes well in Oklahoma."

Canada was ably represented by Drs. Torrance, McGilvray, Watson, C. M. Baker and Villeneuve.

The Ladies' Auxiliary elected Mrs. G. A. Johnson of Kansas City, president, Mrs. Lambert of Ohio, secretary, Mrs. Marsteller of Texas, first vice president, Mrs. Augler of Paxton, Illinois, second vice president, and Mrs. H. P. Hoskins of Detroit, treasurer.

Among the early arrivals were Fitch and Charlie Cotton of Minneapolis, Ward Beebe of St. Paul, Mayo of Chicago, Turner and Munce of Pennsylvania, Jacob of Tennessee, Cahill and Craig of Indianapolis, Hernsheim of Chicago, Klein of Philadelphia, Leon Cloud of Texas, Koen of Illinois, Cassius Way and Adolph Eichhorn of New York, Quitman and Enos Day of Chicago, Kinsley of Kansas City, Hoskins of Detroit, Sigler of Indiana and Brock of Dallas, Texas.

Des Moines, Omaha and Montreal were bidders for the 1923 meeting, Montreal finally winning out.

From the army came Major Foster and Capt. Kelser of Washington and Lieut. Dean, Jefferson Barracks, St. Louis.

Familiar faces were those of Faust of Poughskeepsie, N. Y., "Daddy" Moore of St. Joseph, Mo., Dr. Ticehurst of Tenafly, N. J., and Dr. McKeller of New York City.

Among those absent were: Geo. Berns of Brooklyn, Ben Pierce of Springfield, Mass., Marshall of Pennsylvania, Peter Bahnsen of Georgia, Butler of Montana, Davis of Wyoming, Shepherd of Cleveland, Cooley of Cleveland, Brumley of Ohio, Williams of New York, Higgins of New York, Eliason of Wisconsin, Dalrymple of Louisiana, Dunphy of Michigan, Lamb and Glover of Colorado, Robinson of Providence, R. I., Haring of California.

Among the commercial exhibitors were Parke-Davis, Mulford, Lederle, Zell-Straub,

Haussman-Dunn, Sharp and Smith, Globe Laboratories. The Eagle Company, Ft. Dodge, Serum Company, Swan-Myers, Haver-Glover, Becton-Dickinson, Denver Chemical Company, Alexander Eger, Liberty Laboratories, the Borozone Company, Standard Laboratories, Westmoreland Chemical and Color Co., Pitman-Moore, Corn States Serum Co., Frank S. Betz Co., G. D. Searle Company, Veterinary Specialty Manufacturing Company and Jensen-Salsbery.

Among the State Veterinarians there were: Julian of Indiana, Laird of Illinois, Cary of Alabama, Ferneyhough of Virginia, Simons of Kentucky, Cotton of Minnesota, Hershey of South Carolina, Flowers of Louisiana, Munce of Pennsylvania, Wilson of Missouri and Cloud of Texas.

Dr. John Eagle of Kansas City was the best dancer present.

Dr. E. Calldemeier of Louisville, Ky., was the busiest man there.

Dr. J. A. Wende of Buffalo, N. Y., recently discharged from the government hospital at Hot Springs, Ark., was "among those present."

The heavyweights included Dr. Rives of East St. Louis, 275 pounds, Dr. Morin of McLean, Ill., 265 pounds and Dr. Bell of Nashville, Tenn., 240 pounds.

Dr. G. D. Ingram was there from the much talked of town of Muscle Shoals. Dr. Ingram reports that Muscle Shoals is growing in leaps and bounds and that general practice is developing accordingly.

From California came Dr. Hart of Berkeley and Dr. Sinai of Stockton. Dr. B. J. Symms was there from Corvalis, Oregon and Dr. Moore and daughter came all the way from New Orleans.

Dr. H. M. Wilson, formerly of Illinois and now president of the Arkansas State Veterinary Medical Association, was a congenial visitor.

At the regular gathering of the serum salesmen, Goebel of the Quality Company of Kansas City and Blowers of the Eagle Company, headquarters at Galesburg, Ill., were awarded trophies for having sold the most serum for the 1922 season.

The question box conducted by Dr. Kinsley at the smoker was "the best ever."

The list on the preceding page was prepared, item by item, as veterinarians found additional uses for FER-SUL and FER-SUL-INE, and reported their successes to us.

The list is still growing. New items will be added whenever we get positive reports to warrant. We want no one to put any money into FER-SUL or FER-SUL-INE until he has first made a satisfactory test of them.

MR. VETERINARIAN THIS IS A PERSONAL OFFER TO YOU IF YOU DO NOT KNOW FER-SUL OR FER-SUL-INE.

We will ship you any of the following quantities (and we prefer to make a freight shipment as that is to your financial interest) with the distinct understanding you are to make a thorough test to your satisfaction before you pay the bill.

FER-SUL

1 gal., express not paid.....$ 2.00
1 crate (6 gal.), freight paid... 12.00
1 carboy (12 gal.), freight paid. 21.00
1 bbl. (50 gal.), freight paid, per lb. ..... .10
(about $1.30 per gal.)

FER-SUL-INE

	Per Doz.
2 oz. box (1 doz. in carton)	$2.00
6 oz. box (1 doz. in carton)	4.00
16 oz. box (1 doz. in carton)	8.00
	Each
5 lb. pails	$3.00
10 lb. pails	6.00
25 lb. pails.	12.00

The above by Parcel Post paid.

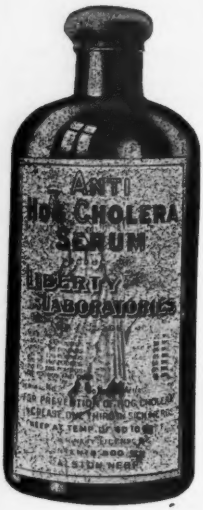
	Each
50 lb. pails, freight paid	$20.00

The Westmoreland Chemical and Color Company

S. E. Cor. 22nd and Westmoreland Sts.

PHILADELPHIA

LIBERTY SERUM



when properly administered unquestionably means **Freedom from the ravages of HOG CHOLERA**

We have an interesting story to tell you. Invite us to do it.

Liberty Laboratories

Anti-Hog Cholera Serum U. S. Vet. License 127

Ralston, Nebraska

Distributing Points:

Omaha, Nebr. Davenport, Iowa
Lincoln, Nebr. Bushnell, Ill.
Bloomington, Ill. St. Joseph, Mo.
Des Moines, Ia.

J. H. Copenhaver, D.V.M., President
B. B. Bowen, D.V.M., Lab. Supervisor
J. S. Koen, D.V.M., Secy.
Carl J. Norden, D.V.M., Sales and Service
C. T. Riordan, D.V.M., Sales

SAYS NEWS ITEM A MISREPRESENTATION OF FACTS

"In the August issue of VETERINARY MEDICINE on page 428 you will notice the note 'North Dakota is going Iowa one better. It is sending out experts among the farmers to show them how to treat all of their animals, not only the hogs.' I would appreciate it very much if you could find the source of this statement and let me have it. It may have been meant at one of the county agents or perhaps at the extension veterinarian who preaches animal disease control work from one year's end to the other. I make no bones about the fact that I get away from practice for a week or two now and then and do this work but we are very careful that we do not overstep ourselves, and the county agent leader, Mr. John Haw, is very insistent that the county agent refrain from infringing on the rights of professional men, merchant, or anyone else. A man is warned just once and if there is a continuation of such practice in our state the agent must hunt a position in some other state. We are doing our best to rectify any grievance that may exist and it is for this reason that I ask my question and take VETERINARY MEDICINE to task."

C. H. Vestal.

Comment: The position VETERINARY MEDICINE takes is that of deploring half-baked veterinary instruction, believing that such movements accrue to no one's benefit. We also believe that honest publicity in this connection will result in the proper orientation of the farm adviser in agriculture just the same as the veterinarian has had to orient himself in the doman of animal husbandry through years of hard work. We compliment Dr. Vestal and the farm adviser mentioned for the position they take in regards to the rights of the professional man and merchant because this is precisely our objective.—Ed.

When animals eat and then chew their cud —that's cow; when banqueters eat and then chew the rag—that's bull.

A few days ago we overheard a man who occupies a high position refer to another whose name is well known to everyone, as a four-flusher, and then a few moments later we heard this same man make a long speech on the "Wisdom of co-operation among practitioners." "Consistency, thou art, etc."

Discussions, News, Personals

FORT DODGE COMPANY EXTENDS ITS OPERATIONS

In order to meet a constantly increasing demand for their products, particularly clear anti-hog cholera serum, and also to assure against a shortage of serum that occurred during the summer months of this year in spite of their enormous output, the Fort Dodge Serum Company have enlarged their production facilities by taking over the plant of the Utah Serum Company of Ogden, Utah. The plant is already in operation under the new management.

KADERABECK & WILLIAMS SUFFER FIRE LOSS

The large veterinary establishment of Kaderabeck and Williams, 16 South Fifth street, Fort Dodge, Iowa, together with nearly all of its animal effectives was destroyed by fire September 14. Nine of the twelve horses in the hospital perished and among them was the valuable race-horse "Carl D." The loss of $12,000.00 was only partially covered by insurance. Dr. Kaderabeck was president of the Iowa State Veterinary Medical Association in 1921 and was one of the pioneer anti-hog cholera serum producers in the country, being with Dr. Baughman the original promoter of the Fort Dodge plant.

MILK TESTING BY THE PRACTITIONER

In the July issue of VETERINARY MEDICINE the editorial on milk testing by the veterinarian comes to my notice. Although I feel small in the profession I have during my eight years of practice carried out a plan that I feel will benefit others in regards to how a veterinarian can be of greater service to his community by actually managing dairies, keeping in touch with herds, barns, care, feeding, breeding and in fact all of the different things that go to make up successful dairying.

During these few years by having followed just such suggestions as you mention I have succeeded in improving dairying in this community in a progressive and scentific way. The idea I wish to convey is that the veterinarian can become the ex-officio manager and advisor to his clientele as well as veterinarian. The plan presuppose:

1. Tuberculin testing.
2. Babcock butterfat test of each non-tuberculous animal of the herd. Instruction of how to take samples and keep records.
3. Feeds and feeding. Instruction in rationing that is profitable and which is made up as far as possible from home grown feeds, and with special reference to the protein, carbohydrate, fiber, fat, mineral and vitamin requirements.
4. Sanitation of barns. Instruction of ventilation and lighting, natural and artificial, whitewashing, disinfection and quarantine; and the importance of good health of heavy producing animals developed a great cost and trouble.
4. Breeding. Instructions to beginners and the pitfalls of breeding for heavy producers.

The practitioner can put himself in a position to do a great deal of good to his clients by simply augmenting the broad knowledge he possesses on these subjects with a study of details that will make him the only outstanding expert in his community.

Newberg, Wis. George Emil Milke.

LAIRD SUPPORTS THE PRACTITIONER

Dr. F. A. Laird, chief veterinarian of Illinois, has issued an order that hogs vaccinated by farmers and intended for exhibits at county fairs must be accompanied by a certificate issued by a licensed veterinarian. The farmer must make affidavit to the veterinarian as to the amount of serum and virus used and the conditions about the farm. The veterinarian issuing the certificate must visit the farm and personally examine the herd. Where a veterinarian has vaccinated the hogs he must make similar inspection and affidavit of health.

Dr. J. T. Hernshiem, who needs no introduction to anyone who attends veterinary meetings, local, state or national, is now manager of the Veterinary Specialty Mfg. Co. of Chicago, and is devoting his time to the exploitation and improvement of the products of this well-known establishment. The perfection of operating tables for both large and small animals is his hobby.

WE REITERATE:

"We produce anti-hog cholera serum and virus and nothing more; and we believe we do that well. Our patrons think so, too."

GUILFOIL SERUM COMPANY
Offices and Laboratory
18-20-22 North Second Street
KANSAS CITY KANSAS

THE STUDY OF LIVE STOCK AT FAIRS

The advice given to farmers by the United States department of agriculture to take advantage of the fairs for the study of live stock is also good advice for the veterinarian. Valuable information may be obtained by making a serious study of the exhibits of all the different species and breeds and especially by keeping in close touch with what is transpiring in the judging arena. By displaying an inquisitive mood it should not take the veterinarian long to learn all about the major and minor points insisted upon by discriminating judges. A good working knowledge of stock judging is an attainment the veterinary practitioner has too long neglected, and in view of the present trend of practice it is one that will in a great measure determine our status.

CLOSED OPERATION FOR VENTRAL HERNIA

The following seems to be a good operation for inguinal hernia in young colts from one to ten days old. I was called to see such a colt some time in April that had a hernia as large as a two-gallon bucket. The colt was in great pain. It was all right when born, but the owner said that after it had fallen from a high bank he noticed the hernia in a few minutes. I saw this colt five hours after it happened. There were two openings in the abdominal muscles. I laid the colt on his back returned the intestinal and closed the opening by taking three stitches through the muscles and skin, without making any incision. This seems to be a safe operation if antiseptically handled and is worth trying again as the patient recovered without complication or recurrence.—W. O. G., Va.

IS HEALTH OFFICER, TOO

County Agent A. A. Burger of Cedar Falls and M. L. Bowman of Waterloo, also gave short addresses on bovine tuberculosis and the effect on humans who drink milk from tuberculous cows.—Cedar Falls Record.

Comment: In view of the fact that "the effect on humans who drink the milk of tuberculous cows" is a disputed question even among the most learned men on the subject it would seem that this is one phase of veterinary science that the farm adviser might trust to the public health service at this time, while dairymen are trying to eke out a living by producing milk against odds. The caption is ours.

RABIES VACCINE EFFECTIVE

I would be pleased to have you publish the following report of an outbreak of rabies which, in my opinion, is of interest because it shows the necessity for close inquiry as to when animals were actually exposed to infection, as well as the value of the single dose rabies vaccine.

About March 5, 1922, a stray dog, showing clinical symptoms of rabies, passed through Avondale, Pa., and fought with several dogs, one of which was owned by Mr. Howard Brosius. This dog was severely bitten. The stray dog disappeared and all trace of him was lost.

On April 8, the Howard Brosius dog developed rabies, fought with several other dogs in the community and also attacked a cow. The cow was severely bitten on the head.

The cow and all of the dogs known to have been exposed to infection from the Howard Brosius dog, were given canine rabies vaccine, single dose treatment, (Mulford), from two to four days after this exposure.

Of the total number of animals vaccinated, three dogs developed rabies in from 4 to 6 days after having been vaccinated. The remainder of the animals, including the cow, failed to develop rabies.

As it is impossible to cause rabies by injecting the particular product used under the skin of an animal and the fact that these animals developed rabies in from 4 to 6 days after having been injected, shows that the vaccine could not have caused the disease.

I wanted, however, to know more about these cases and upon investigation, it was found that the animals that developed rabies, subsequent to vaccination, were owned in the vicinity of the Howard Brosius premises and were animals that had been exposed to the original stray dog that passed through Avondale about March 5. At least 5 weeks had elapsed between date of their first exposure and date of vaccination, and in about 6 weeks, after being exposed to the stray dog, these dogs developed rabies.

I am strongly in favor of using the single dose rabies vaccine as a prophylactic and look forward to the day when it will be required that all dogs be licensed and immunized against rabies. However, my experiences show that the single dose treatment is not only a prophylactic but will also prevent the development of rabies in animals that have actually been exposed, if the treatment is given

"As ye sow, so shall ye reap"

Plant seed that develops a satisfied clientele by using

Standard Serum

"It Prevents Cholera"...

Since it was first introduced Standard Serum was made by and sold only to qualified veterinarians.

The Standard Serum Company

9-11-13-15 South Second

KANSAS CITY KANS.

D. H. Burcham, D.V.S., Pres.
H. E. Zimmerman, D.V.S., Sec.

DISTRIBUTED BY

D. Bourne, Hamilton, O.
W. S. Clemmons, Rives, Tenn.
W. C. Mooney, Galesburg, Ill.
J. M. Sigmon, Stigler, Okla.

THE FOSTORIA SERUM CO.

FOSTORIA, OHIO, U. S. A.

Manufacturers of

Anti-Hog Cholera Serum

Hog Cholera Virus

Under U. S. Veterinary License No. 131

within a reasonable time after exposure.

A single injection is probably all that is necessary for small animals and two treatments (10 cc) for horses and cattle. However, I have no hesitancy in using two and three injections on the small animals and two to five or more on the large animals at one to three day intervals. I have had no bad results.

One of the vaccinated dogs, that has come through without developing rabies, was severely bitten about the head, neck and throat, besides other smaller wounds on the body. One large ugly lacerated wound in the vicinity of the angle of the inferior maxilla opened into the buccal cavity and was very hard to heal.

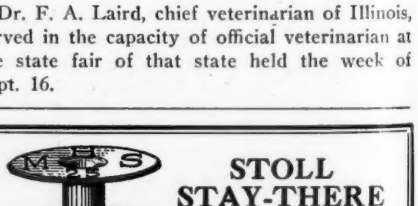
The wounds received treatment in about 12 to 18 hours, but the dog was not vaccinated until the third day after exposure. This dog received three single dose treatments. Two full doses (10 cc) were given as the first treatment and the other single (5 cc) dose treatment was given in two doses at three day intervals. A total of 20 cc was given.

The cow referred to in this report is worthy of special mention because three doses of the single dose treatment held this animal in spite of the fact that she was badly bitten about the head. I gave 15 cc the first dose and 10 cc each the second and third doses at intervals of two and three days, totalling 35 cc in all.

In very severely bitten cases, I have no hesitancy in using two (10 cc) or more doses for dogs and three or more doses, (15 cc) for cows and the other larger animals, for the first treatment.

Avondale, Pa. J. T. Quarll.

Dr. F. A. Laird, chief veterinarian of Illinois, served in the capacity of official veterinarian at the state fair of that state held the week of Sept. 16.



The identification tag for animals that IS satisfactory. Used by the B. A. I., most states, and hundreds of veterinary practitioners. Write for sample and price. An ear mark for every purpose. M. H. STOLL Colorado Springs, Col.

Dr. Walter Stirling has purchased the practice of Dr. T. J. Wilson at Parkston, South Dakota, and has moved to his new location.

Dr. E. L. Sidwell has moved from Kampsville, Ill., to Jerseyville, as a permanent location for practice, and to give his son better educational advantages.

Dr. H. O. Wilson of Stanley, N. D., has moved to Minot for greater opportunities.

Dr. J. W. Tooley, owing to poor health, has relinquished his large practice at Fond du Lac, Wis., to his associate, Dr. H. W. Helm. Dr. Helm is a Chicago graduate and was formerly located at Seymour, Wis.

Dr. L. G. Hart of Chippewa Falls, Wis., has moved to Menomonie, Wis., taking over the former practice of Dr. J. D. Lee.

Dr. H. E. Beister returns to Ames from the University of Illinois to again become an instructor in the veterinary division of the Iowa State college of agriculture.

Dr. J. D. Corson of Mt. Morris has moved to Genoa, Illinois, where he will divide his time between practice and management of his father's large stock farm.

Dr. Allen G. Fogle of the state veterinarian's office of Ohio has became the all around fly-casting and bait-casting championship of Columbus and central Ohio by having won over all entries at the state fair tourney.

Dr. Carl A. Wank has completed the erection of a veterinary hospital at 614-616 South Seventh street, St. Joseph, Mo., modern in every way and representing an investment of $15,000.00.

Drs. Denison and Burgess of Bemidji, Minn., are building a new three-story hospital, 100x60, to be completed October 1. The building is of concrete tile and of attractive design.

Permits for the sale and manufacture of oleomargarine in Canada given as a war measure will be terminated March, 1923.

The Eucamphine Co.

The Mid-Wests Most Popular Biological and Pharmaceutical House

Products Extensively Employed by Physicians and Veterinarians

OUR CHANGE OF PRICES
AUG. 1, 1922

GUAILYPTOL

One pint, at	$ 1.25	
One gallon, at	5.50	Prepaid
Two gallons, at	10.25	"
Five gallons, at	26.00	"

Veterinarians have had a hard season the past year and these prices are to enable them to get back, into a good season's coming, with a better chance of a fair profit, for their professional services.

We believe in service, courtesy and speed, nominal cost, and a more than fair consideration in business.

All the graduate licensed vets know the old reliable GUAILYPTOL so it is useless to say much more on the subject. Do not be misled by the many preparations put out containing GUAICOL. There is only one real GUAILYPTOL—its quality and effectiveness has never been in question, and that product is made by the Eucamphine Co. Tried and never found wanting.

EUCAMPHINE

One pint, at	$ 0.70	
One gallon, at	3.50	
Two gallons, at	6.50	Prepaid
Five gallons, at	15.00	"

You can't beat this **stock product—it covers a large** field for the price.

CORN STATES SERUM

Blood	Clear	Clear Concentrated
$0.93-$1.00	$1.10	$1.40

Virus .....$1.00 per 100 Mil.

Watch for our new fall products. Good quality, and reliable in use. We handle no patent medicines. All products put up by a professional graduated and licensed veterinarian. We will get anything for veterinarians if it is in Chicago's market.

The Eucamphine Company

Telephones
Franklin 2627
Night: Oakland 2304, Lawndale 1328

Address
208 N. Wells St. Chicago, Ill.

A. M. Sorby, President
Dr. Wm. G. Ellwitz, Secy.-Mgr., Consulting Veterinarian

Association Meetings

New York State Veterinary Medical Society

The thirty-second annual meeting was held at the State armory, Syracuse, N. Y., July 26-28, 1922.

President D. H. Udall called the meeting to order on the morning of July 26. After the routine of the business meeting, committee reports, etc., had been taken care of, the president read his address, which dealt largely with the present status of the veterinary profession, its responsibility and its outlook; all of which was optimistic.

Major Jewell and Colonel Hulen Speak for the Veterinary Corps

Major Chas. H. Jewell of the United States Army was asked to speak in reference to the officers reserve corps. Major Jewell's remarks were an appeal to the members of the veterinary profession to join. He explained how men with years of experience and high standing in the profession could aid materially the advancement of the veterinary profession by becoming members of the corps at this time.

Later in the day Colonel Hulen also made a forceful address on the same subject; all of which must be gratifying to those who have seen the rather slow and difficult evolution of the standing of the veterinary profession in the U. S. army. But perserverance and ability have gradually brought about a rightful recognition.

Professor Pierre Fish also spoke briefly on the subject and with telling argument pointed out that when we give encouragement to our army we are doing a service to our country.

This subject, of course, is never discussed in public without paying the just tribute to our lamented Dean Hoskins, who did more to raise the standing of the veterinary profession in the army than any other person living or dead. Longfellow was right when he said,

"The pleasures of the many,
May be oftimes traced to one,
As the hand that plants the acorn,
Shelters armies from the sun."

Small Animal Practice

The first paper of the afternoon was by Dr. A. E. Merry, Syracuse, N. Y., his subject being, "Management of a Small Animal Practice." This paper was discussed by Dr. George Little and Dr. A. Slawson, speaking particularly of the use of serum and bacterins in canine distemper. All these small animal men seem very positive that serum and bacterins are very important agents in treating canine distemper. Dr. Slawson always gives a large dose of serum with the first dose of bacterins. He believes it usually takes about a month for immunity to develop. Consequently, the first treatment should be begun if possible, before the animal is exposed.

Hemorrhagic Septicemia of Cattle

Hemorrhagic septicemia in Cortland County was the subject of a paper prepared by Drs. E. V. Moore and J. L. McAuliff of Cortland, N. Y. Dr. McAuliff read the paper and it is one that any one interested in cattle practice can well afford to read with great care. It gives valuable particulars as to the character of hemorrhagic septicemia, its infectiousness and how when the organisms are made more virulent by passing through acute cases, may and do infect native cattle or in other words, those that have not yet been exposed to shipment, but that have been in the herd perhaps for a long period.

Their experience in this extensive and in many ways unusual outbreak seems a strong support for the theory that this group of organisms naturally inhabits the bovine without being pathogenic, but when the resistance of the animal is lowered by exposure or otherwise, they at once become pathogenic and likewise virulent and dangerous to exposed animals. Another important thing associated with this report and which the profession should be grateful to these young men for is the careful way in which they attempted to prove or disprove the value of biologics in the control of this outbreak; all of which pointed conclusively and positively as other practitioners have found out—notwithstanding arguments on experimental data to the contrary—that bacterial treatment is an effective way and the way to handle this disease.

The three types of the disease were encountered in these different outbreaks. That is, the pulmonary, exanthematous, and the nervous. Their report of thirty-three autopsies was complete and interesting. In the case of sick animals they gave 100 mils of serum intravenously each day usually for three days. About 55 per cent of the sick animals recovered under this treatment. Bacterins were used on the rest of the herds, one injection apparently checking the disease. However, eighteen cases in four herds developed after one injection, but none after the second injection.

This important paper was discussed by Drs. Charles S. Chase, E. V. Moore, J. W. Benner and J. F. DeVine.

Demonstration of physical examination of poultry by Dr. J. W. Fuller was then given and the meeting closed for the day.

Mayor Walrath Addresses the Meeting

The dinner was held on the evening at the Hotel Onondaga, ladies and non-members attending. After the dinner Mayor Walrath of the city of Syracuse, gave an address of welcome. The mayor's pleasing manner and his evidence of good fellowship was delightfully received and responded to by Dr. E. L. Volgenau of Buffalo, in a truly splendid way. His remarks were serious, opportune and dignified. After thanking the mayor for his cordial welcome, he explained why we were at the conference and the important role that the veterinary profession plays in public health matters and our civil liberties. Such an address does the profession good. This is the type of man that should represent the profession on public occasions. The lay people go away with more respect and a better idea of a profession that has been kicked about altogether too much and not always represented by men weighted down with ability or personality.

T. E. Munce Explained Pennsylvania Methods

The meeting on the second day was opened by an address by Dr. T. E. Munce, director, Pennsylvania bureau of animal industry. His subject being, "State Organization for the Control of Diseases in Livestock." Dr. Munce presented charts and explained in detail the methods in operation in Pennsylvania, which is generally recognized as one of the model, if not the model, states in the control of animal diseases.

Commissioner Pyrke Champions Cause of State Rights

The same subject as applied to New York state, was handled by Hon. B. A. Pyrke, commissioner of farms and markets, Albany, N. Y.

Pertaining to Our

Mixed Infection Vaccine (Bovine)

(Glover)

About a year ago I treated 40 head Registered Angus Cattle for the intestinal form of so-called Hemmorrhagic Septicemia with 100% recoveries and no new cases after first injection of Glover's M. I. V. (Bovine). At time of treatment one had died and nine were sick, these animals receiving no other treatment.
I have used Glover's Bacterial Vaccines ever since they were first placed on the market and know they will get results that are possible with few, if any other products.
Fayette, Mo. A. J. Munn, D. V. S.

The value of this product in the hands of the Graduate Veterinarian cannot be overestimated. Arrange to test them at the first opportunity.

HAVER-GLOVER LABORATORIES
Kansas City, Mo.
And All Distributing Branches

CASSIUS WAY CO.

30 East 42d St., N. Y. C.

Specializing in

VETERINARY BIOLOGICS
and
INSTRUMENTS FOR THEIR USE

"Fastest Service on the Atlantic Coast"

LATHROP
U.S. VETERINARY LICENSE No 102
ANTI-HOG CHOLERA SERUM

Made in the country—where the environment and surroundings are pure—free from all possible contaminating influences.

An exclusive product which should interest the veterinarian who "looks into and thinks of the future as well as the present."

Correspondence solicited from qualified veterinarians.

Lathrop Serum Co.
Lathrop, Mo.

He reviewed the situation in New York and showed that he had given the matter much thought. He seemed to have a clear knowledge of the whole situation. He believes that the state should work more and more to the end of taking care of their own troubles and rely less upon the federal government. The thing we liked about his address was that he could give reasons. We predict that with good counsel, Commissioner Pyrke will in time be of real service to the solving of these problems in New York.

Optimistic Address by President Bigler

"The cattle industry in New York; its relation to the administration of disease control in livestock," was discussed by C. F. Bigler, president of the New York State Holstein-Friesian association. Mr. Bigler's address was a good one, full of logic and full of hope. He seems to be the kind of a man to be the head of such an organization. He is anxious to rid our herds of disease without destroying the dairy industry. He believes that all the populace of the state could help to do it and believes in giving liberal indemnities.

Secretary Zimmer Preaches Wisdom of Honest Sales Methods

Mr. Bigler was followed by Mr. E. R. Zimmer, secretary of the New York State Holstein-Friesian Sales association. Mr. Zimmer impressed one as a business man and a fellow that wants to adopt every precaution in protecting, so far as possible, the buyers and sellers of Holstein cattle. The many rules that have been adopted with particular reference to the health of cattle by this sales company, are positively commendable and he made it plain that his association stands ready to adopt any others that are best for the cause.

Chief McLaury, Despite Trials, Has Faith

The last speaker of the morning was D. W. McLaury, chief of the bureau of animal industry, Albany, N. Y. Mr. McLaury reviewed some of the trials and vicissitudes that the chief of this bureau has the pleasure of wrestling with. He seems to take consolation in the fact that Solomon and Moses, with all their wisdom and inspiration, did not escape the dissatisfaction of all the people of their time. Having had a taste of his trials we know how to sympathize with him. But while rummaging over Biblical lore, it might be well to remember that he who had faith was thrice blessed and that calm usually follows the storm.

Tuberculin Test and Other Clinics

The afternoon was given over to a demonstration with about twenty cattle of the tuberculin test technic conducted by Dr. H. W. Turner, Pennsylvania bureau of animal industry.

The following morning clinics were held, Dr. J. N. Frost, performing a rumentomy; Dr. W. W. Williams, an amputation of the cervix, and Dr. W. L. Williams exhibiting the genital organs of the cow in health and disease, by specimens that had been procured at the laboratory.

New Society Organized

On the afternoon of the last day, there was held a sort of supplementary meeting which was styled the first annual meeting of the "Society for the Study of the Diseases of the Genital Organs."

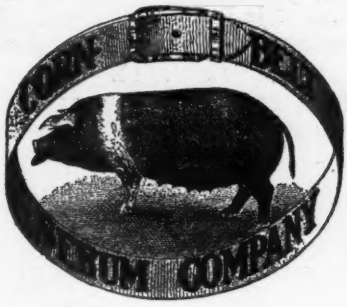
Sutherland Simpson, M. D., of Cornell University, was the first speaker, his subject being, "The Functions of the Endocrine Glands." It was a splendid discussion. The doctor put special emphasis on the things that we do not know concerning these glands and predicted that when accurate knowledge is once obtained on the subject that it will be one of the most important branches of the science of medicine.

The next was a paper that had been prepared by Dr. C. J. Marshall, Philadelphia, Pa., on the "Opportunities of the Practitioner in the Treatment of Sterility." He stressed the importance of the work and the necessity of many men properly preparing themselves to do this work.

Following Dr. Marshall, Dr. F. W. Andrews of Mount Kisco, N. Y., read a paper on the "Use of Pituitary Extract in Disease of the Genital Organs." The doctor having used this drug on several cases of retained placenta, believes that it is of great value in post parturient conditions, where there is atony of the uterus and recommends that the profession try it out thoroughly.

"Nymphomaniac Cystic Ovaritis" was the title of the paper prepared by Dr. W. L. Williams, Cornell university, and Dr. W. W. Williams, Springfield, Mass. The paper dealt with the possibilities of pituitary extract and adrenalin in the treatment of cystic ovaries that do not respond to massaging. The authors said they have not done enough experimental work to recommend how it can best be used or the exact dosage.—J. F. De Vine.

THE



Est. and Inc. 1913

EAST ST. LOUIS, ILL.

Manufacturers of

Anti-Hog Cholera Serum

Hog Cholera Virus

U. S. Veterinary License 77

Service from

BROWN & MAYS DRUG CO.
Quincy, Ill.

DR. M. W. SCOTT
Vincennes, Ind.

O. P. CLARK
Chillicothe, Mo.

ZELL-STRAUB BIOLOGICS

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine

FOR SALE

FOR SALE—Anti-Fis-Tract is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. I. G. Wimsett, D.V.M., Winfield, Kans.

I HAVE A FEW PAIR OF REGISTERED SILver black foxes for sale. This is the center of the black fox industry of the United States. Dr. F. U. Steele, Muskegon, Mich.

FOR SALE—Very desirable practice in Southern California with or without property. Running $500 a month. Bear strict investigation. Terms to purchaser buying property. Retiring. Address No. 696, care of VETERINARY MEDICINE.

PRACTICE FOR SALE—With all modern equipment, including residence and hospital. Located in Central Illinois, in the Corn Belt district. Have been in practice in this location for 17 years. Retiring to move on my farm. The city has 18,000 inhabitants. Some dog practice. Address No. 697, care of VETERINARY MEDICINE.

FOR SALE—Practice in Central Kansas. $1200 to $2000 per month. Will sell equipment, consisting of Ford car, operating table, drugs, instruments, and other supplies, and give five-year lease on building for $3000—one-half cash. Wonderful proposition for anyone wishing to step into a large practice. Hospital well equipped for small animals. Address No. 700, care of VETERINARY MEDICINE.

FOR SALE—Veterinary practice in West Texas. Big territory. No competition. County seat, population 3,000. For particulars write Dr. C. E. Richardson, Clarendon, Texas.

FOR SALE—Veterinary practice in Southern Alabama. Large live stock center. One of the best in state. Bargain to quick buyer. Address No. 699, care of VETERINARY MEDICINE.

FOR SALE—Good practice. $3,500 to $4,000. In a rich farming country. In the "Thumb" of Michigan. Price, $4,000 for home and office, including stock of drugs. Reason for selling: Going into another business. If interested, address No 695, care of VETERINARY MEDICINE.

FOR SALE—Veterinary practice. Ran $2,500 to $3,000 last year. Large territory. Price $250.00. Address Dr. James H. McCoy, Colfax, Washington.

FOR SALE—Growing practice in alfalfa belt of Mississippi. Town 6,000. No competition. Rock roads. Three railroads. Dairy and stock center. Address No. 694, care of VETERINARY MEDICINE.

FOR SALE—Large, general practice in small city in Northwestern Pennsylvania. No competition. Plenty of work and good prices. Sell on inventory. Leaving these parts. Address No. 693, care of VETERINARY MEDICINE, if you mean business.

FOR SALE—Excellent delta practice. Mostly hogs and mules. Runs $600.00 per month. Unlimited territory. Little competition. Collections, 100%. In a live and progressive farming section. Desire to sell drugs, instruments and equipment. Other business interests require my time. Address No. 698, care of VETERINARIAN MEDICINE.

(Continued on page 668)

POSITIONS, LOCATIONS, ETC.

VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

WANTED—Established practice in Minnesota or Eastern North Dakota. Can pay cash, or will consider position with drug or serum company. Address No. 692, care of VETERINARY MEDICINE.

MISCELLANEOUS

"QUICK COLLECTIONS"—Everywhere. Live wire firm! Established 28 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

NICKEL PLATING—Every Veterinarian has some instrument which needs replating. Send them to us. We will make them like new at a moderate cost. Nelson Plating Co., Morris, Illinois.

PRINTING

BETTER PRINTING for less money. Send for free samples of letterheads, envelopes, circulars, booklets, cards, etc. They will save you money. Fantus Co., 525 So. Dearborn St., Chicago.

M. J. Hoffman

Taxidermist

999 Gates Ave., Brooklyn, N. Y.

Specializing in the Mounting of Pet Dogs, Cats, Birds and Monstrosities

Game Heads and Rugs Made to Order

Mounted Specimens of All Kinds For Sale

LET US TAN YOUR HIDE.

Horse or Cow hide, Calf or other skins **with hair or fur on,** and make them into coats (for men and women), robes, rugs or gloves when so ordered, or we can make your hides into Oak Tanned **Harness Leather,** making it into work harness when so ordered; or make **Slaughter Sole Leather.**

We can tan **your calf skins into Shoe Leather,** giving them an elegant grain finish in Gun Metal, Mahogany Russet or lighter shade.

Your goods will cost you less than to buy them and be worth more.

Our illustrated catalog gives a lot of information. It tells how to take off and care for hides; how and when we pay the freight both ways; about **our safe dyeing process** on cow and horse hide, calf and other skins; about the fur goods and game trophies we sell, taxidermy, etc.

Our Fashion Book, which heretofore has been a separate affair, has been incorporated in and made a part of our regular catalogue. **It has Fashion plates** of muffs, neckwear and other fine fur garments; also remodeling and repairing, together with prices and estimates. In ordering catalog, write name and address plain.

The Crosby Frisian Fur Company,
571 Lyell Ave., Rochester, N. Y.

WEST VIRGINIA ANNUAL

The annual meeting of the West Virginia Veterinary Medical Association was held at the Chancellor Hotel, Parkersburg, West Virginia, on July 26 and 27, 1922, when a program covering an unusual scope was carried to a large attendance, all officers being present.

The regular order of business was carried out, and a fine clinic was held at the hospital of Dr. J. C. Callander, Parkersburg, West Virginia.

Dr. Neff, who is in charge of tuberculosis eradication work in West Virginia, was present, and also four of his assistants. Dr. Neff clearly defined his work here and also the co-operation of practitioner and federal employees which he says we must have for the success of both.

The visiting ladies and members were entertained by a banquet and moonlight sail on the beautiful Ohio River. All voted that this meeting was the best ever held by this association. It was also rumored about that a midwinter meeting might be held in Charleston, West Virginia, when our legislative body is in action, to try for a few new veterinary laws badly needed in our state.

New officers elected for the ensuing year were: Dr. Ernest Layne, President, Huntington, West Virginia, and Dr. J. J. Cranwell, Secretary-Treasurer, Fairmont, West Virginia.

J. J. Cranwell, Secretary-treasurer.

NORTHWESTERN ILLINOIS AND SOUTHWESTERN WISCONSIN ASSOCIATION

The Northwestern Illinois and Southwestern Wisconsin Veterinary Medical associations at the annual picnic held at Krape's Park, Freeport, Ill., held August 15, passed the following resolutions:

Be It Resolved That we the signers, members of the Northwestern Illinois and Southwestern Wisconsin Veterinary Medical association, now in regular meeting assembled at Freeport, Ill., do hereby pledge ourselves to buy supplies that are manufactured insofar as possible by a concern that is ethical in its dealings with the medical professions and adheres to a policy of sales to licensed men only or preferably to graduates only.

Be It Further Resolved that each and every one of us shall do our duty in reporting evidence of ethical violations to the secretary-

Strasco Case

A Case of Good Judgment

Any Veterinarian who owns a STRASCO Case will gladly tell you what a great help it is to him. The practical and convenient features of the STRASCO make it the logical choice for general practice, for tuberculin testing and for hog cholera vaccination. Good judgment suggests that long wear, good service and low cost put the STRASCO Case ahead of all cases.

A Good Buy

The 15" STRASCO Case, including partitions and 21 four oz. bottles filled with the most popular STRASCO tablets—

$15.00

Shipped Express Prepaid.
It's ready to make a call when it reaches your office.

Prices of Empty Case

15 in.,	$6.00,	with partitions for	21	bottles,	$7.00
17 "	6.50,	" "	24	"	7.50
19 "	7.00,	" "	27	"	8.50

Four ounce screw cap tablet bottles, with or without label, 10c each.

When you see this handsome case, inspect its thorough workmanship and practical features, you will be delighted with your purchase.

Merely send us a card, stating whether you want a filled case, or tell us what size empty case you wish.

R. J. Strasenburgh Co.
Manufacturing Chemists
Surgical Instruments
Rochester New York

Be Sure It's a STRASCO

"Rolling Stones Gather No Moss"

A glance over our books reveals this interesting fact:

That the successful, prosperous veterinarians are those who began to do business with us ten years ago AND ARE STILL OUR REGULAR CUSTOMERS.

They did not flop around from one serum concern to another.

They knew they could depend on us **always** to supply **good serum** at a **fair price** with **service** that is **perfect.**

The Great Western Serum Co.

820 Exchange Avenue
Stock Yards

CHICAGO, ILLINOIS

Telegraph Address
"Stock Yards Station"
Chicago

Long Distance Phones
Yards 0372
Yards 6400

The patronage of qualified veterinarians is respectfully solicited.

treasurer of this association, so that a record of the same may be compiled for the information of its members.

The annual meeting of this association will be held at Freeport, Ill., October 11 and 12, 1922, at Dr. Swingley's hospital. There will be a clinic, literary program and banquet and a large attendance of both members and visitors is expected.

ONTARIO VETERINARY MEDICAL ASSOCIATION

The annual meeting was held at the reception room of the Harris abattoir, Toronto, August 9 and 10. President J. A. Campbell presided, and brought out in his address that the association was now paying attention to the subjects that are pertinent to the success of veterinary practice. The following is a partial list of the contributions and contributors:

"The Relation of Sweet Clover to an Acute Disease of Cattle," by F. W. Schofield; "Better Sires," by R. Wade; "Hog and Bacon Grading in Canada," by Thos. Olsen; "The Necessity of More Observation by the Average Veterinarian," by C. H. Higgins; "The Relation of the Poultry Industry to the Veterinarian," by Robert Barnes; Swine Diseases, by T. P. White; "Practical Hints on Surgical Restraint and Technique," by C. J. Spencer; "Surgery in Poultry Practice," by J. Dunn; "The Horse: Canada's Cheapest Horsepower," by Wayne Dinsmore, and others.

Dr. Torrance spoke on hog diseases and stated that the losses from cholera in the whole dominion last year was less than $5,000.

D. A. Devine of Toronto was elected president and J. S. Glover also of Toronto the secretary-treasurer.

NEW HAMPSHIRE VET. MED. ASSOCIATION

At the annual meeting of the New Hampshire Veterinary Medical Association Dr. R. W. Smith, state veterinarian, was unanimously elected president. Dr. Smith has served as secretary and treasurer for the association since it was organized in 1915. Dr. John E. Marston of Manchester was elected vice president and Dr. Herbert S. Perley of Hanover, secretary and treasurer.

The business of the meeting consisted of the election of officers and the presentation of the following program:

1. "Anthrax Control Work in the North

GILLETTE ELECTRIC CLIPPER

Clips Horses, Mules, Cattle and Dogs
Shears Sheep and Goats
Grooms Horses and Cows

Special Dog Cutter Guaranteed to Clip Hair of Any Dog

Send for Literature

Gillette Clipping Machine Co.
133 W. 31st St.
NEW YORK CITY

Country," by Dr. A. L. Edmunds, Franklin, N. H. Discussed by Dr. C. F. Hill, Lancaster; Dr. Guy E. Chesley, Rochester; Dr. A. F. Hill, Littleton; Dr. R. W. Smith, Concord.

2. "Tuberculosis Eradication Work from the Practitioner's Point of View," by Dr. F. F. Russell, Concord, N. H. Discussed by Dr. H. M. Lewis, Nashua; Dr. C. E. Swail, Colebrook; Dr. H. S. Perley, Hanover; Dr. E. A. Crossman, Boston, Mass.; Dr. F. V. Dederick, Keene.

3. "Side-lights on the Hartford Conference," by Dr. R. W. Smith, Concord, N. H.

The following resolution was presented and unanimously adopted by the association:

The members of the New Hampshire Veterinary Medical Association do hereby place themselves on record as being in hearty accord with the federal government and the state authorities in their work of the eradication of tuberculosis and do hereby pledge themselves to co-operate with the authorities for the successful carrying on of the work.

Remarks were made by Dr. E. A. Crossman of Boston and Commissioner of Agriculture A. L. Felker.

H. S. Perley, Secretary.

The annual meeting of the Northwestern Wisconsin Veterinary Medical Association will be held at Appleton, October 18, 1922. The officers announce a good program. Dr. Wm. Madson, of Appleton, is the secretary.

Dr. H. B. Ropp, of the firm of Ropp and Dannley, of Ashland, Ohio, was elected president of a new veterinary association recently organized in that city under the name of the North Central Ohio Veterinary Medical Association. Dr. C. C. Wadsworth, of Mansfield, was chosen secretary; Dr. W. F. Wise of Medina, vice-president, and Dr. M. C. McClain, treasurer.

The Peoria Serum Company "is no experiment."

We represent one of the oldest concerns in the industry.

Our business was founded with the idea of serving veterinarians in our natural territory with the "best there is" in anti hog cholera serum.

Does this motive warrant your patronage?

Let us know.

The Peoria Serum Company

J. F. ROSER, D. V. S., Manager

Day Phone: 4-5022
Night Phone: 2-2866

PEORIA ILLINOIS

To the Veterinary Profession Only

TENALINE

A Specific Canine Remedy for

TAPEWORM

Kills and Expels Taenia 20 Minutes After Administration

The ever recurring thought as each case is presented, "What shall I try this time," will be banished after treating one case with

TENALINE

Sold in two ounce bottles, containing about 30 doses, depending on weight of animal.

Price: $1.50 Cash with Order

Sole Agent America and Canada

R. VICKERS

THE PLAINS, VA. U. S. A.

85c

100 c.c.

FRESH

Anti-Hog Cholera Serum and Virus

Just Off Test

F. O. B. Your Town If Order Amounts to 10,000 c.c. or More

Sales Exclusively to Veterinarians

ATLAS SERUM Co.

U. S. Veterinary License No. 170

SOUTH ST. JOSEPH, MO.

PRICES SMASHED $3.00

10 Days FREE Trial World's best makes—Underwood, Remington, Oliver—at big saving. Every machine fully rebuilt to look and work like new. Guaranteed for 10 years. Send no money—big Free Catalog shows how to save money on typewriters. Easy terms. Write today.

INTERNATIONAL TYPEWRITER EXC.
177 N. State St. Dept. 1041 Chicago

The Northwestern Nebraska Veterinary Medical Association is the name of a new organization born at Wayne, Nebraska, August 16. Dr. S. S. Gibson, of Randolph, was chosen president and Dr. R. W. Heckeet, of Harington, secretary-treasurer. The meeting was well attended and the project enthusiastically supported. The first regular meeting will be held at Wayne, October 19.

The Mississippi Valley Veterinary Medical Association, which is one of the pioneer locals of this country, held its regular semi-annual meeting at Galesburg in August. Dr. A. T. Peters, of Peoria, Dr. M. T. Lair, of Alexis, and Dr. H. C. Wadleigh, were the principal speakers.

CLASSIFIED ADVERTISEMENTS

(Continued from page 664)

POSITION WANTED—Graduate, ten years' experience. General and canine practice. Also tuberculosis eradication with B. A. I. Sober and industrious. Address No. 702, care of VETERINARY MEDICINE.

FOR SALE—Veterinary practice. Nearest competitor, 12 miles. Splendid farming country. Practice all round horses, cattle, hogs. Good oiled roads, every direction. Building frame 40x20, on leased lot. Lease on lot paid to Sept. 1, 1923. Good reason for selling. Price $650.00, cash. Address No. 703, care of VETERINARY MEDICINE.

FOR SALE—Rapidly growing practice in Northern Indiana. Large territory. Good roads. Good collections. Will sell practice and good line of drugs reasonable. Address No. 704, care of VETERINARY MEDICINE.

FOR SALE OR LEASE—Veterinary practice and equipment in one of the most prosperous sections of Georgia. Well established and paying. Business runs about $6,500.00 a year in normal times. Mostly white farmers. Good class of live stock and good pay. For particulars address Dr. R. W. Jones, Veterinary Division, State College of Agriculture, Athens, Ga.

FOR SALE—Practice amounting to $5,000 a year. In good dairy section of Wisconsin. Property valued at $3,000, for rent or for sale. Good reason for selling. Address No. 701, care of VETERINARY MEDICINE.

Concluded from page 623

bothriocephalid tapeworm egg, but this diatom is flat, whereas the tapeworm egg is almost spherical. Various cells of algae are figured as figures No. 12, 13, and 14 to show the superficial resemblance of these cells to parasite eggs. The presence of chlorophyll in most of the algae is sufficient to distinguish them from parasite eggs.